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THE MIND OF THE ANCIENT WORLD

Parnassus

THE MIND of the ANCIENT WORLD

A Consideration of Pliny's NATURAL HISTORY

By
H. N. WETHERED

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"That immense register where Pliny has deposited the discoveries, the arts and the errors of mankind."—GIBBON.

"That crystal is nothing else but ice strongly congealed; that a diamond is softened or broken by the blood of a goat; that bays preserve from the mischief of lightning and thunder; that an elephant hath no joints; that storks will only live in republics."—Sir Thomas Browne (*Vulgar Errors*)

"Well, it is all very marvellous; drainage, sanitary systems, lighting, hearing, feats of earthenware manufacture which would cause the potters of the Five Towns to-day to scratch their heads, wine-presses, flourmills, bathrooms with baths extraordinarily like those of 1927: all dating from over three thousand years ago. . . . There are designs which clearly ought to bear the signatures of Matisse or Gauguin."
—ARNOLD BENNETT (on Crete).

PREFACE

ARCHÆOLOGY has at the moment a tremendously strong hold on the public interest and discoveries are being followed with enthusiasm all over the world. The counterbalancing interest lies in the written records that have been handed down to us. Without them the research for material evidence of the workings of civilisation would have little or no meaning; for rediscovered facts need the thought of the period lying behind those evidences.

That is why Pliny's great and comprehensive work will always command attention. One instance may be taken at random to illustrate the point: the old settlements of the lake-dwellers. Pliny saw the inhabitants of these strange regions on the northern shores of Europe with his own eyes and gives us a description of their miserable existence as compared with the happier mortals (in his opinion at least) who enjoyed the privileges of Roman rule. Yet to his surprise they preferred to remain independent, uncivilised and apparently hideously uncomfortable.

Then as regard science and art, of which Pliny treats with great fullness, one finds oneself influenced by two emotions: the one, a feeling that the civilised world was much more modern than one had anticipated; the other a fascination felt for the insatiable curiosity and the vivid imagination of the Greeks. The period of Greek science contained all that has contributed to make the modern world what it is; and by far the greatest recapitulation of the movement occurs in the *Natural History* of Pliny. In the following pages it is the aim to give a fairly comprehensive idea of this immense review, taken from an Elizabethan and now somewhat rare translation,

of which a reprint, seeing that it runs to a million and a quarter or more words, would present some serious difficulties.

But it will be asked: Was Pliny a reliable guide? It is important to weigh the point, because one of the first things to strike a student of his work is the strange diversity of opinion that surrounds him. He has been demeaned to the extent of being described as a collector of odds and ends of pseudo-scientific matter and credited with no more discrimination in the process than a jack-daw—a misconception that could only arise from a very casual and unintelligent acquaintance with the enormous range of Pliny's knowledge, and the judgment, even the humour, displayed by him. Other critics judge Pliny as in some unaccountable way responsible for the majority of the beliefs entertained in the earliest days of science. Against this view it may be urged that Pliny was no prophet nor in any way in advance of his age; he was merely its spokesman and in that capacity fulfilled his mission. He was an historian of the same pattern as Herodotus (also a compiler of records) who set down many things which personally he did not credit but which in loyalty to his authorities he considered it his duty to report, at the same time reserving his own judgment on the matter. "For myself, my duty is to report all that is said, but"—he significantly added—"I am not obliged to believe it all alike, a remark which may be understood to apply to my whole History." Oddly enough, on the few occasions when Herodotus departed from the rule he had imposed on himself he omitted on the score of sheer improbability things that later proved to be true. So credulity can cut both ways.

Dr. Singer, who is naturally most interested in the portions of the *Natural History* devoted to medicine, seems to complain that Pliny writing in the first century had not the advantage of the knowledge possessed by scientists of a thousand or more years later. "In him", he says, "we have a collection of current views on the nature, origin and uses of plants, such as we might expect from an honest, industrious and gullible gentleman devoid of critical or scientific skill." He admits,

however, that his contribution to science was "the prototype of the medical output of the next fifteen hundred years." This at any rate may be considered as no mean achievement, to be followed as a leader of scientific thought for such a prodigious length of time. "His very discursiveness and love of gossip", he adds, "are our gain, and though he can do nothing to advance medical knowledge he gives us much insight into medical practice in antiquity." What more, it might very reasonably be asked, was it ever in his power to give?

Supposing, for the sake of argument, that it is true that Pliny's "remedies", as contained in certain plants, taking them as a whole, were often too good to be true—that rue, for instance, was claimed to be able to cure a hundred or more complaints without any great difficulty. Do not our modern advertisements of patent medicines follow very much the same lines of guarantee? After all, was Pliny much more gullible than the moderns? "Experience" may be taken to be just as delusive a guide as ever it was. Nor did Pliny himself fail to realise the impressionable character of the audience he was addressing, when he says distinctly: "Science and the opinion of the mob are in direct opposition".

Turning to the more complimentary notices of the *Natural History*, Wight Duff in the *Literary History of Rome in the Silver Age* bestows on it the high praise that it ranks as "one of the half-dozen most interesting books in the world".

Nordenskiöld, again, states in his *History of Biology* the opinion that next to Aristotle Pliny was "the most influential of the Biologists of classical antiquity". Dr. T. R. Glover describes him as "a born collector with a passion for epigram, readable wherever you open him"; the only qualification he makes to this statement is that one would "rather read his Latin than construe it"—an opinion amply justifying the use of the excellent translation which has been handed down to us rather than the original text.

Finally, there is Gibbon's highly judicial and impartial statement that in this vast work Pliny has "deposited the discoveries, the arts, and the errors of mankind". In this lies its

greatest merit as an historical document. In fact, to say that Pliny was just as learned as he was curious may fairly sum up the qualities that enabled him to present so complete a picture of antiquity.

Another enquiry that may very naturally be made is: "What after all is the value of ancient science?" The man in the street might argue that since the greater part of this old science has been superseded it is therefore of no further use—that it is no more worthy of pursuit than water which has run down the gutter or the waters of a river which have mingled with the sea.

But this analogy carries a better construction. May not a true knowledge of science as a whole be in itself valuable? The lower reaches of a river may be admirable for the freer scope of communication and commerce; but the upper reaches also deserve to be explored, all the mysterious smaller tributaries, the curious and attractive backwaters. Hilaire Belloc has said that a man is only half a man who treads the sacred soil of Europe without feeling the solidity of the two thousand years beneath him. If this be true (it is a general appeal to the value of history) the principle applies equally to matters connected with the evolution of science.

And from the point of humanism alone there is, as Walter Pater once pointed out, an appeal. "Nothing which has ever interested living men and women", he says, "can wholly lose its vitality—no language they have spoken, nor oracle beside which they have hushed their voices, no dream which has once been entertained by active human minds, nothing about which they have ever been passionate or expended time and zeal."

In this highly perfected statement of the claims made on us by antiquity we become awake to the inexhaustible interest of the ages.

At the same time a warning is necessary to exercise some caution in offering too elaborate explanations on points where speculation was as brilliantly alive as amongst the Greeks. By knowing too much we only succeed in the end in starving the imagination. It is equally a mistake to imagine that the

ancients were mere children where their science was concerned. On the contrary, although some of their guesses at truth may have been a little wide of the mark, others were surprisingly close to the bull. The dull people are those who, like Mr. Barlow in *The Uncommercial Traveller*, would too frequently interpose their ineffective comments. "What right", Dickens complained, "had he to bore his way into my Arabian Nights? Yes he did. He was always hinting doubts of the veracity of Sinbad the Sailor. If he could have got hold of the Wonderful Lamp, I knew he would have trimmed it and lighted it, and delivered a lecture over it on the qualities of sperm-oil, with a glance at the whale fisheries. He would so soon have found out—on mechanical principles—the peg in the neck of the Enchanted Horse, and would have turned it the right way in so workmanlike a manner, that the horse could never have got any height into the air, and the story couldn't have been."

An opinion has been quoted bearing on the discomfort entailed by reading Pliny's Latin, a remark that naturally suggested the desirability of someone else construing him for us. It is therefore fortunate that the *Natural History* has been known through many other tongues than the original. The friend who first introduced the book to my notice knew it through a translation in Italian. But our own Elizabethan rendering which appeared within ten years of the Authorised Version of the Bible is a legacy which shares the rich glamour and distinction of that admirable period of English prose.

This translation has therefore been used, and, wherever it has been quoted, has been slightly modernised in the matter of spelling, punctuation and sometimes also in economy of phrase where a little condensation has seemed advisable. But in no case has the atmosphere or the character of the original been interfered with.

The sources of information on this vast field of ancient lore are far too numerous to be given in detail. Amongst the many useful authorities available the following may be recommended: *Physical Science in the Time of Nero*, by Clark and Geikie;

Aristarchus of Samos, by Heath; *History of Biology*, by Nordenskiöld; *From Magic to Science*, by Charles Singer; *The Travels of Sir John Mandeville*, a very curious mediæval echo; and *Greek Byways* and *Herodotus* by T. R. Glover, to whose kindness I am greatly indebted for many valuable suggestions in handling this varied and fascinating subject.

H.N.W.

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CHAPTER I

Author and Translator

ST. AUGUSTINE said of Varro, the first of the Roman encyclopædists—no Romans were ever original scientists—that he read so much that it was a marvel he ever had time to write anything, and wrote so much that it was difficult to see how he found time to read. If this was true of Varro it was a hundred times truer of Pliny. He was a man possessed with a mania for acquiring information, never satisfied and always looking for fresh avenues of knowledge. He ransacked the libraries for books on science, so many of which have been lost to us, either burnt in the great fire of Alexandria or destroyed in the general destruction when the Empire fell.

Thus Pliny kept alive for us the ancient tradition which otherwise would have lacked the one supreme coherent account. The importance of such a document during the Middle Ages was incalculable in view of the intimate association of science with philosophy existing amongst the Greeks particularly, and to a lesser degree amongst the Romans. Plato's knowledge of astronomy affected the nature of his loftiest speculations; and Aristotle, the greatest biologist of his age, treated science as a necessary part of a system which included ethics and politics with the study of natural phenomena. We therefore get at the mind of Rome in the first century by studying its so-called "natural history"—that is, the interpretation then accepted of the forces of nature.

Much of the science of the ancient world also was wrapped up in what we now call legend but which the ancients regarded as sober fact. The voyage of the Argonauts was to them not merely a story but a voyage that actually took place in the

heart of Central Europe, necessitating the portaging of the good ship Argo by its crew over the Alps down to the harbour on the Adriatic where she regained the sea. Pliny even tells us the wood she was built of. Legend, science, literature, graphic and sculptured art, religion, all went to make one glorious whole, and no one more fully than Pliny has set forth the component parts of this vast assemblage of human knowledge. His industry was like the rocks of loadstone that drew all good things to themselves, even the nails out of the ships that were passing by.

Caius Plinius Secundus, known as the Elder Pliny in order to distinguish him from his nephew, the Younger, was born at Como of noble parentage in A.D. 23.

During the fifty-six years of his lifetime many notable events happened. Jerusalem was taken and destroyed by his friend and comrade-in-arms, Vespasian, acting with his son Titus; London came into being as a Roman settlement; Agricola sailed for the first time round Britain; an ocean route with India was opened up through the Red Sea; and St. Peter and St. Paul, according to tradition, are said to have been martyred at Rome twelve years before Pliny's own tragic death.

The details of Pliny's life are scanty but sufficient to indicate the strength of his intelligence and a passion for work which was carried almost beyond rational limits. In a letter which the Younger Pliny wrote to Baebius Macer he gives us a sketch of his distinguished relative that includes among his personal reminiscences a short catalogue of the books he wrote. These embraced military instruction, the art of oratory, grammar and science. A work on *Cavalry Javelin-Exercise* occupied one volume and was written when he was in command of the allied cavalry in Germany. A *Life of Pomponius Secundus* in two volumes was a testimony to a friend; and *The German Wars* followed as a more ambitious historical work in twenty books. This was undertaken in response to a dream in which Drusus Nero, a famous soldier who fought at his side against

the Germans, appealed to him for recognition. Other writings were on more literary subjects. Finally he completed the *Natural History* in thirty-seven books, his great scientific work which alone remains, a work which his dutiful nephew fitly described as "of great compass and learning and no less varied than nature itself"—a tribute which does it no more than justice. Altogether 102 "Books" stand to Pliny's credit; and judging from the length of one single book of the *Natural History* his total output constitutes in itself a substantial library. This, too, by a man who had practised for a considerable period with success at the Bar, had governed two provinces, fought in many parts of Europe, had been the close adviser of emperors, and was at the time of his death an Admiral of the Fleet. A prodigious record for one man whose energy did not allow him to slacken his efforts in anything he undertook.

The qualities which the Younger Pliny assigns to his uncle as contributing to this vast achievement were a piercing intellect, an incredible power of application and an extraordinary faculty of dispensing with sleep. He worked at night by candlelight to early hours in the morning and was up before daybreak to attend on the Emperor Vespasian who also was accustomed to work by night. On his return to his home he would partake of a light and digestible breakfast in the old-fashioned style and lie in the sun, if it were summer and fine weather, when a book would be read to him of which he would take extracts; for he used to say that no book was so bad but that it contained *something* at any rate of value.

After his sun-bath he bathed in cold water, lunched and afterwards enjoyed a nap. Then his studies were resumed till dinner-time, when again a book was read aloud and commented upon. Such was the ordinary routine when at home. When he went abroad a secretary was kept busy at his side with books and tablets; and should it be winter, he was provided with gloves so that no time would be lost by frozen fingers. As a final tribute to his uncle's fanatical craze for never wasting a moment the writer records how he himself was once reproved

for taking a walk, on the ground that the exercise represented so much time that might have been better employed in study. It is little wonder then that from the tone of many of his other letters the nephew, although he too attained a high position at the Bar and in important offices in the State, reacted from this violent fit of industry. In fact, he confesses that in comparison with his uncle he ought to blush with shame as a sluggard and a trifler.

The events leading to Pliny's death are given at some length in a letter to the historian, Tacitus, who had asked for an account. The Younger Pliny tells how his uncle's attention, while the fleet was lying at Misenum, was suddenly drawn to a cloud of unsual size and shape rising from Vesuvius which presaged the terrible eruption under which Pompeii and Herculaneum were ultimately doomed. The cloud appeared in shape like a pine tree with a stem branching out into a mass of towering foliage. The wind carried the upper part away, and earth and ashes then began to fall. Pliny ordered his fast-sailing cutter to be got out in order to investigate the unusual occurrence; but at that moment a message was brought from a friend on shore asking for assistance. Upon this his four-ranked galleys were launched, and taking command he approached the shore, dictating notes all the while of the developments of the eruption that were taking place. The sea was rising and hot ashes and pumice falling. So terrifying was the scene that the helmsman wished to turn back, but Pliny cried to him—"Fortune favours the brave"—and bade him go on.

Arrived on shore Pliny showed himself unmoved in the face of the general panic, consoled his friend, bidding him calm his fears, and asked to be conducted to his bath. Afterwards he dined in apparently the best of good humour. Meanwhile sheets of flame and tall columns of fire were blazing, the effect greatly heightened by the darkness which was as great as if night had fallen. In spite of the terrors of those around him Pliny calmly went to sleep, his snoring, so we are told, being plainly audible to those in attendance outside his door. The conditions soon became rapidly worse. The walls nodded

under the repeated and tremendous shocks, swaying to and fro. The fall of ashes threatened to block up all the means of egress and people were covering their heads with pillows to protect themselves from the red-hot cinders. A move was decided upon to the shore where a huge and angry sea was running, and Pliny was induced to lie down on a rug which was spread on the ground. But the sulphurous fumes caught him by the throat. Two slave boys attempted to raise him to his feet, but in vain; he fell back struggling for breath, his gullet being "weak and narrow and frequently subject to wind." In the morning when light returned he was found whole and uninjured in the dress he wore, in appearance as if he had fallen asleep rather than lying dead.

Such was the end of one of the greatest and most enthusiastic workers in history, amidst the confusion of an event considered to be the most dramatic convulsion of nature that ever agitated the Western World. The Younger Pliny, then eighteen, and his mother narrowly escaped with their lives. Dio Cassius, writing more than a century later, spoke of the eruption as being accompanied by the sound of trumpets (as one would speak of a gale of wind blowing big guns) and described in vivid terms the profound impression created throughout the whole of Italy by an upheaval which buried Pompeii and Herculaneum, together with works of art which Pliny actually described, under an ocean of mud, earth and ashes borne down the mountain slopes by the incessant torrents of rain.

Pliny tells us that in writing the thirty-seven books of the *Historia Naturalis* he consulted no less than 2,000 volumes written by 100 Greek and Roman authors. In his list are included such illustrious names as Homer (reckoned a scientific author of the highest order and called by Pliny a "prince of learning and father of antiquities") Herodotus, Xenophon, Thucydides, Euclid, Democritus (the originator of the Atomic Theory), Plato, Aristotle (the first evolutionist), Archimedes, Theophrastus (the "father of botany"), Dionysius, Ctesias,

Varro,[1] Strabo, Boethius, Anaximander, and a host of others, many of whose works are now unknown. No more representative list of authorities from the ancient libraries could very well have been selected.

Unlike most old manuscripts that of Pliny was never lost during the darkest days of the Middle Ages. This was due largely to its popularity—one might almost say its modernness—in those distracted times. It was continually being copied, not always with the accuracy which would now be considered desirable from a strictly scholarly point of view, so that in this way the text became unusually corrupt. Monks and scribes freely interpolated readings of their own whenever their inclinations so prompted them. Also they paid little attention to the source of the original which was being copied, because a patron so long as he could acquire a copy for his library did not consider the absolute accuracy of the text a matter of vital importance.

As an example of the licence that was customary, the copyist was sometimes tempted to add on his own account a word of thankfulness that his task was at last accomplished—a pardonable sentiment but hardly a relevant comment.

The book was first printed at Venice in 1469 and ran through forty-three editions—a sumptuous volume, dignified with an imposing title-page and fine initial letters. Every possible care was taken over the editing, as it is known that Politian collated the text three times with the assistance of two manuscripts borrowed from St. Mark's at Florence and a third lent by King Ferdinand of Naples.

[1] Varro came just within Pliny's orbit, as he died at the advanced age of over eighty, four years after Pliny was born. The *Res rusticæ* and a book on rhetoric have alone survived of his works; but he was also an authority on grammar, astronomy and mathematics. In fact, he was the first really competent Roman encyclopædist, and worked under the direct patronage of Julius Cæsar. His writings however were less representative of the ancient world than the *Natural History* of Pliny because he was definitely prejudiced against Greek learning and sought under a mistaken patriotic motive to bring the Latin authors more prominently to the fore than they deserved. He, too, like everyone who wrote on medicine, was indefatigable in advocating the oddest cures for human complaints, the majority of them concerned with the recitation of charms and appropriate forms of ritual. Pliny quoted very freely from him.

When it was translated into English in Elizabeth's reign, translation was something of a novelty and Philemon Holland, on whom the task devolved, had already earned the title, bestowed on him by Fuller, of the "Translator-general of his age." To the fact that translation was a somewhat unusual experiment may be attributed the fashion of not adhering too slavishly to the Latin text and also that happy and unrivalled knack characteristic of the Elizabethans of breathing their own spirit into their renderings so as to convey the impression that they were almost independent authors. At that time indeed to translate a classical author into "the vulgar tongue" was deeply resented by contemporary scholars. We see signs of this antagonism in the care with which Holland declares in his Preface that his aim is to bring to light such writings as lay dead and buried in darkness—"to make old stuffs new and set a gloss and lustre on what is dim and dark; for surely it is antiquity that has given grace, vigour and strength to writings, even as age commends the most generous and best wines". He cherishes the hope that in the end he will be thanked for his pains by every party he addresses—by the young students who are more than ready to get away from the obscure construction of Latin, and—here he permits himself a delightful touch of irony—by the great scholars "who would take a delight in conferring together and deciding where he had tripped".

The title-page describes the work as:

THE
HISTORIE
OF THE WORLD
Commonly called
The Naturall Historie of
C. Plinius Secundus

And the date is 1601, thirteen years before another famous *History of the World*, written by Sir Walter Raleigh. The word "history", it may be observed, can be used in two senses. In the Latin sense it applies to a narration of events; but according

to the Greek derivation (that in which Pliny uses it) it signifies a compendium of all forms of knowledge.

Philemon Holland was eminently qualified for his stupendous labours; for he lived to over eighty, never needed to wear spectacles, and translated, in addition to the Pliny, the complete works of Suetonius, Livy, Plutarch and Xenophon —this, too, in what might be termed his leisure moments, for by profession he was a physician. On this account he was particularly qualified to do full justice to a work which he honestly believed, from the medical point of view alone, would confer untold benefits on the health of rich and poor alike.

The style of the translation may be judged from its date. It appeared in the same year that *Hamlet* was produced, about mid-way between the dates of the *Bishops' Bible* in 1568 and the *Authorised Version* of 1611. It therefore enjoys a considerable measure of that quality of rhythm and phrase which has been proved so well adapted to the rendering of ancient writings. The only modern version which has since appeared was published in the Bohn Library in 1855, by John Bostock and T. H. Riley; more literal and exact, no doubt, but lacking the sparkle and pleasant flavour of our greatest age of translation.

Very fortunately the version of Philemon Holland succeeded in preserving the popular tone of the original. It may be conceded that a certain proportion of ancient science may be slightly whimsical; at the same time it will be found to be full of surprises. With the grave is mingled the gay. That is the reason why in his dedication to his friend, the Emperor Vespasian, Pliny refers to "these treatises written to the capacity of the vulgar people, for base commons, rude husbandmen, and peasants of the country, and to gratify those who have not time or leisure but to study upon such points and nothing else." The study alone of herbal medicine was held to be of untold value in alleviating the ills of life; and apart from this practical interest, it was intended as an encyclopædia to include every subject under the sun with, wherever

possible, a fund of anecdote to enliven the occasional dryness. Thus we find under convenient headings the stories of Cleopatra and her pearls and poisons; Apelles and his pictures; Alexander and his horse Bucephalus; Cincinnatus and his plough; the short-sighted Nero and his emerald, his singing and his breathing exercises; and an excellent collection of fish, bird and animal stories, of which many have long since passed into common currency thanks to the industrious mediæval revivalists. Amongst these we find the eagle making her young ones gaze full at the sun without blinking in order to prove their worth; the mother-bear licking her cubs into shape, as if she were modelling them, while young and pliable, like so much putty; of dolphins enthralled with the songs of sailors and carrying small boys on their backs to school; of elephants and nightingales conning their lessons by heart; and marvellous accounts of noble-hearted lions and huge forbidding serpents. In short, a gossiping fund of information with a story wherever practicable.

Another historical interest of the *Natural History* has been to preserve for us a picture of the wonders of the world which seized and coloured the imaginations of Greeks and Romans. And then with regard to art treasures, Pliny is the first critic adequately to describe the pictures which the ancients painted, the statues they carved in marble, ivory and gold, the images they cast in bronze, and the vast monuments and buildings they erected in many a fair city—

> "Proud and goodly kings had built her, long ago
> With her towers and tombs and statues all arow,
> With her fair and floral air and the love that lingers there,
> And the streets where the great men go."

Vast and diffuse though this great work may be, it contains more authentic history of the customs and thought of the old world than a host of modern reconstructions. We are addressed by an authentic eye-witness and a commentator who knew intimately the gossip of the Forum and the prevalent beliefs and superstitions of his time. We cannot fail to recognise the

typically practical sense of the Roman people, who still retained the keenest appetite for the curious and miraculous. Above all, it stands for Pliny's credit and our enjoyment that his interest in the arts of mankind was as alive and searching as his love and knowledge of nature.

CHAPTER II

Of Man

If Pliny was not able to follow out to the full the sage recommendation of Dr. Johnson—

> "Let observation, with extensive view,
> Survey mankind from China to Peru,"

he was at all events just within touch of China, the land of the Seres, from which came the silk to deck the dames of Rome (much to the disapproval of stern moralists on the score of immodesty) and even to be worn by the more luxurious soldiers beneath their armour in the extreme heat. It is true that Peru was unattainable; but the islands in mid-Atlantic are described with a fair amount of accuracy.

In his survey of mankind, therefore, Pliny had plenty of scope for observation, particularly in observing what other authors had had to say before him. He was himself no great traveller for the sake of travelling, although he knew France, Germany and Spain at first hand in the course of his military and administrative duties. Egypt he had visited, and he was also probably well acquainted with other parts of the Mediterranean seaboard. But further afield he derived his knowledge from the pages of Herodotus, Strabo and other writers on geography and anthropology.

The Stoic philosophy to which he was attached led Pliny to form a cold, pessimistic and fatalistic view of man's destiny. So far indeed from man being "the beauty of the world and in apprehension like a god," in the orthodox Roman mind he belonged to a savage herd only redeemed by the arts, by means of which the benefits conferred by Nature were utilised and converted into blessings. In a sense Nature was to be

regarded as "the art of God", and man the recipient of His mercies. The great drawback was that men were so notoriously disrespectful to their great Mistress, tearing up the earth ruthlessly in the search for gold, marble, iron and other metals.

Yet in spite of this somewhat cheerless philosophy man was felt by the Romans to be a highly interesting creature, in some ways a disheartening puzzle but always presented with endless and exceptional opportunities. Cicero had recognised a godlike element in mortal man—a daimon, or *genius*—which was something unexplainable in human consciousness. Pliny, however, preferred to dwell on the blank materialistic outlook, on a life of inherited pain, inevitable sickness and death, with little to hope for beyond the grave. His aim indeed was to discover, if possible, in Nature means of alleviating his unhappy lot, even to the extent of the benefit of being able to commit suicide by poison. *Joie de vivre* was no conspicuous feature of the Roman philosophy, as may be judged from the following passage, a lament that takes us back to the gloomy outlook of the Æschylean chorus:

"It is hard to judge whether Nature in producing man has played the part of a kind mother or a hard and cruel step-dame. For first and foremost, she has brought forth man naked and clothed him with the goods and riches of others. To all other creatures she has given sufficient to clad every one according to their kind; with shells, crusts, spines, hides, furs, bristles, hair, down, feathers, scales and fleeces of wool. The trunks and stems of trees and plants she has defended with bark and rind, sometimes double, against the injuries of heat and cold. Man alone, poor wretch, she has laid all naked on the bare earth, even on his birthday, to cry and wraule (squall) from the first hour he is born into this world.

"Among so many living creatures there is none subject to shed tears and weep like him. Indeed no babe or infant is given to laugh before he is forty days old, and that is counted very early and with the soonest.

"Moreover, as soon as he has begun to enjoy the light of the sun he is immediately tied and bound fast and has no member at liberty; a thing that is not practised on the young whelps of any beast among us, however wild he may be. The child of man thus

untowardly born and who another day is to rule and command all others, lo how he lies bound hand and foot, weeping and crying, and beginning his life with misery, as if he had to make amends to Nature for the one fault and trespass that he is born alive!

"O folly of all follies ever to think that we were sent into this world to live in pride and carry our heads high! How long is it ere we can walk alone? How long before we can prattle and speak, feed ourselves and chew our food strongly? What a time the mould and crown of our heads continues to beat and pant before our brain is well settled! All other creatures have a secret instinct of nature to know their own good: some are swift of foot, others rapid of flight; some are strong of limb, others can swim. Man alone knows nothing unless he is taught. He can neither speak, nor walk, nor eat otherwise than he is trained to it; in short, he is good at nothing except to pule and cry.

"For this reason some have been of the opinion that it had been better for a man never to have been born, or else speedily to die. None but ourselves sorrow or wail, are given to excess and superfluity in everything, and show the same in every member that we have. Who but we are ambitious and vainglorious? Who but we are covetous and greedy of gathering riches? None but we desire to live long and never to die, are superstitious, careful of our burial, yea, and what shall betide us when we are gone. Man's life is the most frail of all others and he lives in the least security. No creature lusts more after everything than he. None fears like him and is more troubled and amazed in his fright: and if he is once set upon anger, none more raging and wood (mad) than he. The lions, fell and savage as they are, fight not with one another. Serpents sting not serpents, nor bite one another with their venomous teeth. Nay, the monsters and huge fishes of the sea war not amongst themselves in their own kind. But believe me, Man at man's hand receives most harm and mischief. [1]

"After men are buried there is a great diversity of opinion what becomes of their souls and ghosts, wandering some this way and others that. But it is generally held that in whatever estate they were before they were born, in the same they remain when they are dead; for neither body nor soul have any more sense after death than before nativity. But this folly and vanity of men extends even to the future, and in the very moment of death flatters itself with fond imagination and dreams of I know not what life after this.

Some attribute immortality to the soul, others devise a certain transfiguration thereof.

"Again there are those who suppose that the ghosts[1] sequestered from the body have sense, therefore they honour and worship them, making a god of him that is not so much as a man. As if indeed the mode of men's breathing differed from that of other living creatures! There are to be found many other things in the world that live much longer than men, yet no one suggests in them the same immortality. But show me what is the substance of the soul by itself! What kind of matter is it apart from the body? Where lies the seat of her thoughts? How is her seeing or hearing or touch performed? Nay, how is she employed? But I would know where she has her abiding place after her departure from the body. What

[1] Did Pliny himself believe in ghosts? The answer is not quite clear. His nephew, the "Younger", certainly did, as is shown in one of his *Letters* where he tells of a fine house in Athens which was haunted. In the dead of night sounds of iron striking on iron were heard, a distinct clanking of chains approaching from the distance. Then a spectre appeared, a squalid old man with a long beard and bristly hair, with shackles on his legs and fetters on his wrists, which he was continually shaking.

The house was abandoned and put up for sale. But a philosopher, Athenodorus by name, was interested in psychical research. On seeing the advertisement—

"His suspicions were aroused by the low figure, so he made enquiries and discovered the reason. This did not in the least discourage him. In fact, the prospect rather attracted him than otherwise and he rented it.

"As soon as it began to get dark, he ordered a sofa to be placed in the front part of the house. Then he called for his notebooks, writing materials and a light. He sent his household to bed and gave his whole attention to what he was writing, determined that his imagination should not play him tricks or picture to his mind the phantom which he had heard of.

"At first the deep silence of the night reigned undisturbed. Presently he heard the shaking of irons and the clanking of chains. But he never lifted his eyes from his work or slackened his pen. He hardened his soul and closed his ears to the sound. The noise increased as it grew nearer. It seemed to be at the door—at last, inside the door. He looked round and saw the figure. It stood beckoning to him with its finger, as if inviting him to follow.

"In reply Athenodorus made a sign that it should wait a moment, and again applied himself to his tablets and pen. Upon this the figure kept on rattling its chains over his head as he wrote. He looked up and saw it making the same sign as before. So he took a light and followed.

"The ghost moved with a slow step, as though weighed down by its chains, turned into the courtyard of the house and then vanished. The philosopher, suddenly finding himself alone, marked the spot carefully with some grass and leaves. Next day he made an application to the magistrates to have the place dug up. There they found a quantity of bones lying, mixed up with fetters. The body to which they had been fastened had rotted away and left them rusted to the chains.

"Finally the remains were collected and buried by the authorities. From that day to this the house was freed from the spirit which was now decently buried."

an infinite multitude of souls like shadows would there be in so many ages, past as well as to come!

"These are but fantastical, foolish and childish toys, devised by men who would fain live always and never make an end. There is the same foolery in preserving the bodies of dead men; and the vanity of Democritus is no less, who promised a resurrection and yet himself could never rise again. What a folly to think that death should be the way to a second life! What repose and rest could ever men have that are born of a woman if their souls should remain in heaven above with sense, while their shadows tarried beneath in the infernal regions! Surely these sweet inducements and pleasing persuasions mar the benefit of the best gift of Nature, Death." [2]

It is important to note however that Pliny's philosophical convictions did not altogether fit with his personal feelings and experiences. Life to him was far from being the fleeting insignificant thing he described if we are to judge from the value he placed on time. Indeed, he enjoyed and valued time in a way that differed conspicuously from a doctrine of general futility. This he proved by using it to the last second, instead of trying to kill it. Indolence meant a state of misery, industry a state of happiness; otherwise he would scarcely have pursued his labours so earnestly. Nor were fame and immortality, as demonstrated in the good opinion of posterity, things empty of meaning to him. In his actions there was no sign of weakness or instability; in the last danger of all he was the most cheerful person present. So in voicing the Stoic view of life, he must not necessarily be regarded altogether as the unmitigated pessimist he would have us believe him to be.

If he took a gloomy view of things as a matter of philosophic principle and inherited conviction he had no admiration for a crabbed attitude of mind in others. Crassus, he says, was never known to laugh in all his life: Socrates was never merry nor was he ever solemn: Diogenes the Cynic was so austere that he finally came to hate all mankind and thus cultivated a corrupt, perverse and froward nature. These "pillars of philosophy", as he called them, were by no means his ideal

of the perfect man. Cato, rather, in his estimation was the pattern of Roman character, the highest type of conservatism, unswerving in his devotion to duty and the inveterate enemy of all foreign innovation.

In his broad survey of man Pliny leaves no side free from detailed examination. He sees him from every angle—as mentally constituted ("memory is the greatest thing of all"), and physically from such points of view as his powers of endurance (the ancient world was keenly interested in athletic records), his stature, longevity and various peculiarities. The discovery of the fossil remains of some prehistoric monsters revealed by an earthquake in Crete misled him as well as others into thinking that the human race was on the down-grade in point of size. Yet Pliny could vouch for a man in his own time, Gabara by name, who attained to the height of nine feet nine inches: and he adds that there were in the time of Augustus two others, Pusie (little John) and Secundilla, half a foot higher, whose bodies were kept as a public show in a sepulchre in the gardens of the Salustii. At the opposite end of the scale we read of a dwarf "two feet and a palm in height", a mighty favourite with Julia, the granddaughter of Augustus.

Statistics about longevity never lose their interest. Hesiod estimated the life of the crow at nine times the average of human life; of the stag at four times that of the crow; and the raven, the longest lived of all, at three times that of the stag. The phœnix lived for 660 years, and some men (generally kings) were assigned exceptionally long terms of years in their lifetimes, varying from 150 to 800.

Here Pliny, it is true, makes allowances for different methods of reckoning. Some nations made the summer one year and the winter another; each of the four seasons were sometimes taken as a full year; and the Egyptians calculated years by the moon's phases. In this way it might have been possible for unusually favoured individuals to have lived for a thousand years and upwards.

Another favourite topic of the old writers concerned

instances of abnormal births. Livy mentions cases of a lamb with a sow's head, a pig with a man's, and a foal with five feet. He mentions, too, that hermaphrodites were thrown into the sea. In the strange story, recounted below, of a woman being delivered of an elephant, the suggestion has been made that some malformation of the nose of the child was the basis of the story. It will also be seen that there was little necessity for the State in Italy to encourage large families.

"That women may bring forth three at one birth is well known, as in the example of the Horatii and Curiatii. But to go above that number is commonly spoken to be monstrous and to portend some mishap. Of late years, no longer since the latter end of the reign of Augustus Cæsar, at Ostia there was a woman (a Commoner's wife) delivered at one birth of two boys and as many girls: but this was a prodigious token and no doubt portended the famine that ensued soon after. In Peloponnesus one woman brought forth at four births twenty children, five at once, and the greater part of them all did well and lived. Trogus is my authority that in Egypt it is an ordinary thing for a woman to have seven at a burden. Pompey the Great, in the Theatre which he adorned and beautified with singular ornaments of antique work, represented one Eutiche, a woman of Tralles, whose corpse was carried to the funeral fire to be burnt by twenty of her children, after she had in her lifetime borne thirty births. As for Alcippe she was delivered of an Elephant; marie that was a monstrous and prodigious token and foreshadowed some heavy fortune that followed after.

"In short, many misshapen monsters of diverse and sundry forms have come this way into the world. Claudius Cæsar writes that in Thessaly there was born a monster called an Hippocentaur, that is half a man and half a horse; but it died the very same day. In fact, after Claudius came to wear the diadem we ourselves saw the like monster, sent to him out of Egypt, embalmed and preserved in honey.

"The Emperor Augustus among other singularities that he had during his life, saw before his death the birth of M. Silanus, the grandson of his grand-daughter; that is to say, his progeny to the fourth degree of lineal descent. Q. Metellus Macedonicus leaving six children left eleven grandsons also, with daughters-in-law and sons-in-law twenty-seven in all of all such as called him father. In the

Chronciles of Augustus Cæsar we find it recorded that C. Crispinus Helarus, a gentleman of Faesulae, came with a solemn pomp to the Capitol, attended upon by his nine children (seven sons and two daughters) with seven-and-twenty grandsons, the sons of his children, and nine-and-twenty great-grandsons more, once removed, who were his son's grandsons, and twelve granddaughters besides that were his children's daughters, and with all these he solemnly sacrificed." [3]

Several curious instances are given of change of sex. Pliny professes to have himself seen in Africa a citizen of Tisdrita who "turned from a woman to be a man upon the very marriage day and lived at the time I wrote this book". Another "person" was reported at Argos who had been called Arescusa and was a married wife, and afterwards grew a beard and "thereupon wedded a wife".

Here are some references to likenesses in families, which show traces of the Mendelian Theory.

"We observe that children often resemble their grandfathers and that in the case of twins one is sometimes like the father, the other like the mother; and then again a boy born a year later has been as like his elder brother as if he had actually been one of the twins. There are some women that bring all their children like themselves, and others again like their husbands: and some like neither the one nor the other. You will find women bring all their daughters like their fathers, and, contrariwise, their sons like the mothers. One example is remarkable, and yet undoubtedly true, of one Nicaeus, a famous wrestler of Constantinople, whose mother was begotten in adultery by an Ethiopian and yet had a white skin in no way different from other women of that country. He himself was black and resembled his grandfather, the Ethiopian aforesaid. Certainly the cogitations and discourses of the mind make much for these resemblances, and also accidental circumstances are thought to be very strong and effectual, whether they come by sight, hearing, memory or imaginations apprehended on the instant of conception. The wandering and quick spirit of the father or mother, flying to and fro all of a sudden, is supposed to be one cause of this impression, making for either uniform likeness or confusion and variety. And so it is, and no marvel, that men are more unlike one another than other creatures; for the nimble

motions of the spirit, the quick thoughts, the agility of the mind, the variety of discourse in our wits, imprint diverse forms; whereas the imaginative faculty of other living creatures is immoveable and the same in every one, which causes them always to engender like to themselves, each one in their several kind." [4]

Long-distance running was a sport which showed how great was the appeal to the imagination of the original Marathon. Phidippides ran from Athens to Lacedaemon, 1140 stadia, in two days; and a footman, taking a message to Alexander the Great, covered the 1200 stadia between Sicyon and Otis in one day. (A stadium was reckoned as 600 Greek feet.) "At this day", Pliny says, "are some in the great circus able to endure in one day the running of 160 miles, and but a short while ago a young boy only nine years' old between noon and evening ran 75 miles." Nero with three chariots, riding post haste to his brother Drusus, then lying sick in Germany, covered 200 miles in a day and a night—the distance form London to York.

Here are feats of strength which are more credible:

"Varro in his treatise of extraordinary strength speaks of one Tritanus, a man little of body and lean, but of incomparable strength, much renowned in the fencing school and in handling the Samnite weapons (armour of gladiators). He also makes mention of a son of his, a soldier that served under Pompey the Great, who had all over his body and through his arms and hands a network of sinews running across and across. When an enemy out of the camp challenged him to a combat he would neither put on defensive harness nor arm his right hand with offensive weapons, but with naked hand managed to overcome him and in the end when he had caught hold of him brought him into his own camp with one finger. Junius Valerus, a centurion of the Guard was accustomed to hold up a chariot laden with casks of wine until the wine was drawn out. Also he could with one hand hold a coach against all the force of the horses striving and straining to drag it forward. He performed other wonderful masteries which are to be seen graven on his tomb. Varro says he was called Hercules Rusticellus (a bumpkin Hercules) for taking up his mule on his back and carrying him away. As for Milo, the great wrestler of

Croton, when he stood firm on his feet no man could make him stir one foot; if he had a pomegranate fast within his hand no one was able to stretch a finger of his and force it out straight." [5]

Some remarkable instances of long vision are given. One man was reputed to be able to see a distance of 135 miles. During the Carthaginian War he used to stand and watch on a cape in Sicily to see the enemy fleet come out of the haven of Carthage. What is more, he could tell with accuracy the number of the ships.

Microscopic sight also was not uncommon, to judge from the fact that the whole of the Iliad was once written on a piece of parchment that could be enclosed in a nutshell.[1] Can that have been the origin of the phrase? Whether people were able to read such a condensed manuscript is not stated.

And there was Pyrmecides who in the same manner wrought a chariot with four wheels and as many steeds in so little room that "a silly fly could cover it all with her wings". Also he made a ship with all the tackling to it, no bigger than a little bee might hide with her wings.

Memory was accounted the greatest of all the gifts of Nature, and the most necessary for the purposes of this life. King Cyrus could call every soldier in his army by name, and L. Scipio could do the same by all the citizens of Rome. Mithridates was so accomplished a linguist that he administered justice to the twenty-two nations under his rule without the assistance of an interpreter and could address them eloquently in their own languages. Verbal memory, too, reached a point that Macaulay might well have envied. Charmidas, a Greek, could deliver by heart the contents, word for word, of all the books a man could call for out of any library, just as though he was reading them. It was actually said that the art of memory had been taught so successfully that a man could repeat the words of any discourse after having once heard it. This is more than any modern memory system could ever claim.

[1] Pope was nicknamed "Homer in a nutshell" from the little chariot in which he used to travel up to London.

"And yet there is nothing in man so frail and brittle, whether it be occasioned by disease, casual injuries or by fear, and through these causes it fails sometimes in part, at other times it decays generally and is clean lost. One with the stroke of a stone forgot his letters and could read no more. Another falling from the roof of a very high house lost the remembrance of his own mother and kinsfolk: and Messala Corvinus, the great Orator, forgot his own proper name. So fickle and slippery is man's memory that often it attempts to make its escape from us, even while a man's body is otherwise quiet and in health. But let sleep creep upon us at any time, it seems to be vanquished; so that our poor spirit wanders up and down to seek where it is and to recover it again." [6]

One of the fundamental questions, then as now, was the problem of fortune and happiness. Pliny's view was that the Romans were admittedly the most valorous of all the nations under the sun; but it was another matter to determine who as an individual had been the happiest man in all the world, considering that felicity is to be found now in one thing, now in another. Everyone, he says, measured happiness according to his fancy and affection; the only reasonable conclusion to be drawn was that there is no such thing as real happiness to be looked for either in this world or the next. Even the "red-letter days" (as we call them) marked in old days by white stones, were more than offset by the black Fridays.

As to life after death the Stoic theory was that spirit was an ultra-gaseous form of matter. The soul, or life, could be pictured rising from the steam of the sacrifice and passing into the body of the spirit which pervades the universe. The soul therefore was material in its nature, and in that belief it was natural to assume that no pleasure or satisfaction was to be experienced by a man who had once lived and had now ceased to continue his material existence. Resignation seemed to Pliny to be the primary virtue,[1] and fear the deadliest enemy

[1] Another sidelight on the Stoic counsel of perfection and happiness is thrown by the Younger Pliny in a letter, which compares with a remark made by Pascal, that he could not imagine a practising Christian ever being in perfectly good health. Whether Pliny the Elder shared the views expressed by his nephew may be doubtful, but as a moralist he would probably have agreed. "The illness of a certain friend lately reminded me that we are best while we are sick. For what sick man is tempted

to human felicity. Shakespeare, too, speaks of fear as "of all base passions the most accursed."

"Fortune has indeed dealt well with us if we may not justly be called unhappy; for even if there is no actual misery and calamity, a man is always in fear lest Fortune will frown upon him and do him a shrewd turn one time or another. Let this fear be once admitted and there can be no sound happiness and contentment in the mind.

"Then, too, is it not the case that there is not a man who is at all times wise and in his perfect wits? Would God that this were taken of most men for a poet's word only and not a true said saw indeed! But such is the vanity and folly of poor mortal men that they flatter themselves and are very witty to deceive themselves, making their reckonings of good and evil fortune, like the Thracians by casting certain white and black stones into an urn to signify the proof of each day's fortune. At the time of their death, they separate these stones and according to the number of the black and white give judgment of each man's fortune. But does it not often fall out that the day marked with a white stone for a good day had in it the beginning of some great misfortune and calamity?

"How many men have seemed to fall into fortune's lap and entered on great empires and dominions, which in the end turned to their afflictions and miseries? How many have we seen overthrown, punished extremely and brought to utter ruin even by their good parts and commendable gifts? Those are truly good things and great favours if a man can enjoy them for but one hour with contentment. The case in the ordinary course of the world stands thus: one day is the judge of another, and the day of death judges and determines all, therefore we can put our trust in none of them. Foolish and sottish men that we are with all we should ponder and peise them by weight.

"It doubles the pain of a man that is to die if he has to think and consider what will betide him in the time to come. For if it is

either by avarice or lust? Such an one is not the slave of his amours, has no appetite for honours, is neglectful of riches, and holds the smallest portion of them for enough, seeing that he is about to part with them. He envies no one, admires no one, despises no one; not even to malicious gossip will he pay attention. He proposes to himself an easy and comfortable existence for the future—that is, a harmless and happy one—if he has the luck to escape. What philosophers strive to teach with a multitude of words, and even in a multitude of volumes, I can condense in a phrase: In health we should continue to be such as, in sickness, we promise we shall be in the future."

sweet and pleasant to live, what pleasure can a man have that has once lived and now does not? How much more ease and greater security it were for each of us to put his trust in himself and to ground his resolution and assurance upon returning to the experience that he had before he was born." [7]

With Pliny's words on happiness it is of interest to compare the point of view which Seneca, another Stoic, takes. It was not resignation in which he believed so much as an exaltation of spirit, rising to a higher level of thought than the mere material enjoyment of life, and finding consolation in the contemplation of Nature and her works. This was "a greater and fairer realm placed by nature beyond human sight . . . and for myself", he adds, "I am grateful to nature, not so much when I see her on the side that is open to the world as when I am permitted to enter her shrine". It was thus a sacred duty to find out if possible of what stuff the universe was made. Life would be a useless gift if it was not man's privilege to be admitted to the study of the most lofty themes. "How despicable a creature is man", he exclaims, "unless he rises above the earth! The pursuit of wisdom and knowledge is the greatest endeavour of which he is capable. It takes him away from the heat and sweat and dust of life, from the fear of death and the averting of sickness and disease",

Then in a fine passage Seneca expresses his disdain of the common run of mankind in the striving for empty mastery, and likens the world to a vast ant-heap:[1]

"The full consummation of human felicity is attained when, all vice trampled under foot, the soul seeks the heights and reaches the inner recesses of nature. What joy then to roam through the very stars, to look down with derision on the gilded halls of the rich and the whole earth with its store of gold! Gold, did I say? Yes, all the gold the earth ever produced and sent into currency, and all that she keeps hidden in secret to glut the avarice of posterity. Only when one has surveyed the whole universe can one truly

[1] Two famous parallels are Isaiah's reference to mankind as a race of grasshoppers, and Gloster's words in *King Lear*—

"As flies to wanton boys, are we to the gods,
They kill us for their sport."

despise grand colonnades, ceilings glittering with ivory, trim groves and cooling streams transported into wealthy mansions. From above, one can now look down upon this narrow world, covered for the most part by sea, an ugly waste either parched or frozen. The philosopher says to himself: Is this the plot that so many tribes portion out by fire and sword? How ludicrous are their frontiers! The Dacian must not pass the lower Danube; the Strymon must shut off the Thracians; the Euphrates must be the barrier of the Parthians; the Danube must form the boundary between Sarmatian and Roman; the Rhine must set a limit to Germany; the Pyrenees must raise their chain between Gallic and Spanish provinces; between Egypt and Ethiopia a desert of barren sands must stretch! Why, if ants are ever endowed with human intelligence, will not they in like manner portion out a threshing-floor into many provinces?"

The passage seems to strike a familiar note. The reference to the threshing-floor points to a familiar symbol. Its circular shape when the corn was trodden out by oxen or mules in endless rotation obviously suggests the universe, with the sun, moon and stars carried round from day to day. But another interpretation of the floor is even more relevant when the corn is beaten out with sticks, as appears in *Habakkuk*, where God is spoken of as marching through the land in indignation and threshing the heathen in anger—a figure of speech not at all inapplicable to modern times.

CHAPTER III

Of the Body and Physic

FROM man in the mass to man as an individual, made up of arms, legs, head and the rest, is but a step. By splitting him up into his component parts it was considered possible to assign to each the particular duty imposed by Nature to assist in the working of the complete machine. Thus we find, in the investigations to discover the source of life, particular emphasis laid on heart, brain, liver and blood. Of these the heart, according to Pliny, was the seat of the mind and soul, of courage and the finer forms of vitality. The same idea is expressed in the Bible—"He is valiant whose heart is as the heart of a lion". So real and persistent was this belief that as late as the Crusades the heart of Robert Bruce, according to his own instructions, was cut out of his body when he was dead, in order to be buried in Palestine. Douglas wore it round his neck in a silver casket when he rode against the Moors in Spain, but unfortunately he was killed and the scheme miscarried.

The softer emotions so frequently attributed to the heart and so suitably pictured on St. Valentine's Day, were not centred in this organ by the ancients. "What authority", said Charles Lamb, who was a judge of symbolism, "we have in history or mythology for placing the headquarters and metropolis of God Cupid in this anatomical seat rather than in any other, is not very clear." Certainly the sentimental association did not date from pagan days.

The heart was held to be the source of heat, which in its turn was the cause of life. It was continually moving and panting, as if it were a separate animal. It had to be defended, as if it were a kind of fortress or castle, by "a strong mure of ribs and the breast bone."

Descending to particulars, creatures that had a hard and stiff heart were supposed to be brutish. That is a familiar idea. But it is strange to find that creatures having hearts excessive in proportion to their size (such as mice, hares, asses, deer and hyenas) were the most timorous; while the valiant always had small hearts in their bodies. More than that:

"It is reported of some men that they have Hearts all hairy and these are held to be exceeding strong and valorous: such was Aristomenes the Messenian who slew with his own hand 300 Lacedaemonians (in three sundry battles). Being sore wounded and taken prisoner he saved his life once and made an escape out of the cave of a stone quarry where he was kept as in a prison, for he gat forth by narrow Fox holes under the ground. Being caught a second time, while his keepers were fast asleep, he rolled himself to the fire, bound as he was, and so without regard of his own body burnt in sunder the bonds wherewith he was tied. At the third taking the Lacedaemonians caused his breast to be cut and opened, because they would see what kind of Heart he had; and there they found it all overgrown with hair." [8]

The absence of the heart in the sacrifices on one occasion presented a difficult problem:

"It was under L. Posthumius Albinus, the King sacrificer at Rome, that the Soothsayers and Wizards began first to look into the Heart, among other inwards. The very day that Cæsar Dictator went first abroad in his royal purple robe and took his seat in the golden chair of state, he killed two beasts for sacrifice and in both of them the entrails were found without any Heart; whereupon arose a great question and controversy among the Augurs and Soothsayers how it could be that any beast ordained for sacrifice should live without that principal part of life or whether it had lost it at the very moment of its death." [9]

The question at issue was whether some supernatural agency was at work to account for the omission.

Blood struck Pliny most forcibly on account of its emotional changes of colour. He considered it a marvel that its force and strength should vary for every little motion and passion

of the mind, such as shame, anger and fear. At one moment it could be pale, at another red—always in different shades according to the state of feeling. In fear "it retires and flies back, so that a man does not know what has become of it". This change of colour only took place in man. Change of hue in animals was due to other causes: "they take an outward colour from the reflection of certain places near them". The chameleon was a great puzzle for turning, as it did, into "such variety of colours". The instinct of the creature for camouflage was noted, but the full explanation was not forthcoming.

It was understood that creatures which had blood had brains also. Pliny followed Aristotle in describing the brain as the moistest and coldest part in the whole body. Keeping a cool head meant that the brain was functioning properly in keeping the head cool. Aristotle also held that the heart was the organ of the soul and of the intelligence; but Pliny placed the higher functions in the skull. It may be added that he assigned more brains to men than to women, both in bulk, so one gathers, and in quality.[1]

"Of all parts necessary for life it is placed highest and next to the cope of both head and heaven. In truth it is the fort and castle of all the senses; all the veins from the heart tend unto it. It is the very highest keep, watch-tower and sentinel of the mind. It is the helm and rudder of intelligence and understanding. Moreover, in all creatures it lies forward in the front of the head; and good reason, because all our senses bend that way just before our faces. From our brain comes sleep; from thence proceeds our naps, our nods, our reeling and staggering. And look, whatever creature is lacking in brains, the same cannot sleep." [10]

The liver possessed the property of distributing the blood, and to it was attached the gall. When black choler lay in the liver it caused fury and madness, so that furious and raging

[1] The ancients took a great interest in the thickness and hardness of skulls. Bears were supposed to have the softest; parrots the hardest. Herodotus mentions that when he visited a battlefield, where Persians and Egyptians had fought, that the Persian skulls were exceedingly brittle; he could break them easily with a pebble. The Egyptian skulls, on the other hand, resisted a violent blow, the reason being, as he considered, that the Egyptian skulls were shaved regularly from early childhood and that the heat of the sun was thus able to bake them all the harder.

persons were, and still are, said to be "choleric" or full of gall. If it was dispersed over the whole body, then it produced the yellow jaundice which " colours the very eyes, as it were with saffron."

The idea and material evidence of blood, in one form or another, lay at the root of all the ancient religions. The old rituals positively reeked with blood. The extent of the sacrifices of human beings and living creatures revealed in history is overwhelming, and its appeal proceeded from the inherited belief that blood was the one great material and vital element.

Thus the Liver, being the source of blood, was the most significant part of the anatomy in the sacrifices. As a mode of divination the inspection of the liver in sacrificed animals came originally from the East. It was common in ancient Sumeria, was extensively practised in Asia Minor, and later adopted with enthusiasm in Italy as a portent of remarkable certainty. Whenever an Emperor was about to die the liver was sure to be missing or else distorted in some curious fashion. On the other hand, its multiplication or duplication was considered a favourable omen. Augustus on entering upon his imperial dignity found in all six of the beasts killed six livers redoubled and folded inwards—a certain sign that he would double his power and authority.

The associations of other parts of the body were, on the whole, of less importance. The knees contained "a certain religious reverence" which, as Pliny rightly remarks, has been generally observed throughout the world. Then "to raise the back part of the hand to the lips and put it forth (a pleasing variation of the Fascist salute) was to give a testimony of faith and fidelity." In Greece it was a gesture of reverence to touch the chin in the act of supplicating some great personage. In giving witness it was customary to touch the tender lappet of the ear where the seat of memory was supposed to be.[1]

[1] It is told of Alexander the Great, by Plutarch, that when he first had to try cases upon capital charges he would "lay his hand upon one of his ears while the accuser spoke, to keep it free and unprejudiced in behalf of the party accused". Later on he had such a number of accusations brought before him that he did not take the same care and dropped the habit.

Now it is generally the forehead which is touched in the act of any strenuous mental effort.

The skin was not without its significance. Pliny was inclined to dispute the popular belief that a thick skin resisted "the entrance of subtle air and fine spirit into the body". This belief we have inherited and attribute to thick-skinned people an attitude impervious to the finer shades. Pliny did not entirely agree with this opinion; and no doubt he had justification in his conclusion.

"People point out that those men who are thick-skinned and more brawny are more gross of sense and understanding. As if indeed Crocodiles were not very witty and industrious, and yet their skin is hard enough! As for the River-horse, his hide is so thick that javelins and spears are turned from it; and yet so industrious is that beast that in some cases he is his own Physician and has taught us how to open a vein and let blood. The Elephant's skin is so tough and hard that targets and shields are made thereof, of such good proof that it is impossible to pierce them through; and yet they are thought of all four-footed beasts to be most ingenious and witty. Wherefore we may conclude that the skin itself is senseless and has no fellowship at all with the understanding, and especially that of the head." [11]

The ears were the most vainglorious and costly parts of the body because of "our dames and their precious stones and pendant pearls". In the East men also thought it a great grace and bravery to wear earrings of gold. The forehead and eyebrows were the strongest indicators of emotion; they expressed sorrow and heaviness, mirth and joy, clemency and mildness, cruelty and severity. Pride and arrogance, too, had their seat in the brows: "In the whole body it can find no part more eminent and haughty and more steep than the brows in which to rule and reign without controlment".

Eyes are very varied in their appearance and functions:

"Some men have great glaring eyes; others again have them little and pinking. Some are goggle-eyed as if they would start out of their heads, and these are supposed to be dim-sighted; others are hollow-eyed, and they are thought to have the best and clearest

sight, as is the case also with those which resemble in colour the eyes of the Goat. Blue eyes commonly see the clearer in the dark. It is reported of Tiberius Cæsar that if he was wakened in the night, he could see everything for a while as well as in the clear day; but soon after, by little and little, the darkness would overcast everything again—a gift that no one in the world was ever known to have but himself. Augustus Cæsar of famous memory had red eyes like some horses; and indeed he was wall-eyed, for the white of it was much bigger than in other men. If a man looked earnestly upon him and beheld them wistly (intently) he would be displeased and highly offended. A man could not anger him worse. Claudius Cæsar had a fleshly substance about the corners of his eyes that took up a good part of the white and many times they were very red and bloodshot. Nero had a very short sight; unless he winked (as it were) and looked narrow with his eyes he could not see anything well, however near. Caligula the Emperor had twenty couple of professed sword players in his fence school and of all these only two could not be made to wink or once twinkle with their eyes, and therefore they always carried the prize and were invincible. Many men cannot choose but be evermore winking, but such are holden for fearful and timorous persons.

"Eyes are the very seat and habitation of the mind and affection. From them proceed the tears of compassion. When we kiss the eye we think that we touch the very heart and soul. From hence comes our weeping; from hence gush out those streams of water that drench and run down the cheeks. But what might this water and humour be, that in hearts' grief issues in such plenty and is so ready to flow? Where may it lie at other times when we are in joy, in mirth, and repose? It cannot be denied that with the Soul we imagine, with the Mind we see, and the Eyes as vessels and instruments receiving from it that visual power and faculty send it soon after abroad. Hence it is that a deep and intentive cogitation blinds a man so that he sees nothing; namely when the sight is retired far inward. Thus it is that in the Epilepsy or Falling-sickness the eyes are open and yet see nothing: for why? The mind within is darkened.

"We that are citizens of Rome have a sacred and solemn manner in use among us, to close the Eyes of those that are giving up the ghost; and when they are brought to the funeral fire to open them again. The reason of this ceremonious custom is that as it is not

meet for the Eyes of a dead man to be seen by the living, so it is an equal offence to hide them from heaven, unto which this honour is due and the body now presented.

"Men and women have hair growing on the brims of both Eyelids. The women colour them every day with an ordinary painting that they have; so curious are our dames and would so fain be fair and beautiful that, forsooth, they must dye their eyes also. Nature gave them these hairy eyelids for another end, namely, for a palisade, as it were, and rampier of defence for the sight, to stand out like a bulwark to keep off all little creatures that might come against the eye, or whatsoever things should chance to fall into them." [12]

Lastly, two other points may be taken—the voice and the pulse. An infant begins to prattle and talk when it is a year old and not before. It could be taken as a general rule that the children which began with their tongues too early were always late in finding their feet. Every man and woman had an individually distinct voice just as they had a separate face—a fact that accounted for the many varieties of languages. "In the same way", Pliny concludes, "as the Voice is the utterance of our mind and distinguishes us from brute and wild beasts, so the differences of speech among men are as wide as the difference between man and beast."

The pulse, or "beating of the Arteries", was a phenomenon of which Herophilus made a special study, treating its action as a science in itself. He set down the exact beats and rhythms appropriate for people of every age, and noted when they were too fast or too slow. "The observation of the strokes, either coming thick and fast, or slow and softly, gives a great light to judge of the strength of Nature that governs our life." The art of Herophilus has in this respect remained the most permanent feature in all medical practice.

Trogus seems to have been the great authority on physiognomy. Aristotle also made some general remarks about the significance of certain signs, which Pliny dutifully repeats:

"It was once thought good in Egypt to nourish and keep a monstrous man who had four eyes, of which two stood in the

back part of his head behind; but surely he never saw at all with them. I wonder verily that Aristotle not only believed but set down in writing that there were certain signs in a man's body whereby we might foreknow whether he would live long or no. Which, although I take them to be but vanities (because I would not have men amused and busily occupied in searching for Prognostications in themselves, as touching their own life) yet I will touch on the same and deliver it in some sort, since so great a clerk as Aristotle held them for Resolutions and thought them worth the penning. He put down therefore as signs of short life thin teeth, long fingers, and leaden hue, many lines in the palm of the hand with cross bars or short cuts. On the other hand those who are Lute-backed, thick shouldered and bending forward, who also have two long life-lines in the hand, and more than two-and-thirty teeth in their head, and besides are well hanged and have large ears, are long lived. And as far as I can guess he did not require that all these figures should concur and meet together; but, as I suppose, his meaning is that every one of them by itself is significative and sufficient.

"Trogus, a most grave and renowned Author among us, is of opinion, moreover, that judgment can be given not only of men's complexions, but also of their conditions by their very countenance; and surely I think it not amiss to set down his very words. A large and broad forehead (says he) is a token of a dull conceit and heavy understanding; and contrariwise they that have a small forehead are by nature fickle and inconstant. Finally a round forehead, bearing out, argues anger and choler, as if betraying the swelling and boiling of that humour. Where the eyebrows are straight and lie evenly, they betoken soft and effeminate persons; but if they bend and bow towards the nose they show austerity. If their turning and bending is toward the temples of the head, they are signs of a mocker and a scorner Finally, where they lie very low such persons (be ye sure) are malicious, spiteful and envious. Long eyes testify hurtful and dangerous persons. They that have the corners full of flesh are of a malicious nature: where the white of the eye is spread large and broad, it is a token of impudence. Such as are always winking and closing their eyelids (trust me truly) they are giddy-headed and unsteady. Those that have great ears, especially the laps thereof, make account that they are blabs of their tongue and fools withall. Thus much of Physiognomy according to Trogus." [13]

The ritual of sacrifice went far to familiarise people with the organs of the body and suggested various ideas as to the manner in which imperfect bodies might be restored to a normal condition of health. Such an enquiry led Pliny into a variety of scientific channels and more particularly into herbal medicine. Plenty of vegetables and salads was Pliny's stock prescription for good health. Lettuce and cucumber, fresh cabbage (*crambe bis cocta*, a warning against a stale dish or topic), radishes eaten with salt before breakfast, parsnips, onions greatly venerated by the Egyptians, leeks used by Nero to clear his throat for singing,[1] asparagus (*velocius quam asparagi coquantur*, a proverb suggesting speed)—these were all excellent and wholesome correctives. "Nature ordained at the first such things to be the remedies of our diseases which we feed and live daily upon; even those which are soon found and as soon prepared, which are ready at hand, common everywhere, and cost us little or nothing at all."

In that case why, Pliny asks, is the knowledge of simples and the cures they can effect not more widely known? His answer is that the better classes are ignorant on the subject and that it is the peasants who are most conversant with such remedies, living as they do where the herbs grow. Another reason is carelessness and a disinclination to take the trouble to look for them; and a still stronger reason is that "every place swarms so with Leeches and Physicians, and men are so ready to run after them to receive some compound medicine from them".

"But the most shameful cause why so few simples in comparison are known is the naughty nature and peevish disposition of those persons who will not teach others their skill, as if they were afraid of losing for ever what they imparted to their neighbour. Added to all this that there is no certain way to direct us to the knowledge of herbs and their virtues: for if we consider the herbs which are

[1] Nero, in practising singing, used to wear a plate of lead on his breast, "under which he would chant out lustily with a wide throat and strong voice his filthy sonnets and beastly ballads; but he showed thereby that lead was a singular means to maintain a good voice". The lead was obviously worn to assist as a breathing exercise.

found already we are for some of them beholden to mere accident, and for others (to say the truth) to the immediate revelation from God.

"As a proof of this I will relate to you one instance. For many years the biting of a mad dog was counted incurable and those who were so bitten fell into a certain dread and fear of water. Neither could they abide to drink or to hear it mentioned; and then they were thought to be in a desperate case. It happened of late that a soldier, one of the guard about the Pretorium, was bitten with a mad dog, and his mother saw a vision in her sleep, giving (as it were) direction to her to send to her son for him to drink an extract of it, the root of an Eglantine or wild Rose (called Cymorrhodon) which she had seen the day before growing in a Hortyard and which she much admired. This occurrence took place in Lusitania, the nearest part of Spain to us. Now, as God would, when the soldier upon his hurt received by the dog, was ready to fall into the symptom of Hydrophobia and began to fear water, a letter came from his mother, advertising him to obey the will of God and to do what was revealed to her by the vision. Upon this he drank the root of the said sweet briar or Eglantine and not only recovered beyond everybody's expectation, but also as many as were in a similar case took the like receipt and found the same remedy." [14]

There was, however, an alternative remedy—namely, to bite off the puppy's tail at the nethermost joint when it is just forty days old. The tail, Pliny says, will not grow any more and the dog will never go mad. Does this belief account for the fashion of docking the tails of some of our modern breeds?

Cato had a rooted objection to anything Greek, and not the least of his antipathies was to the Greek physician. He wrote a letter of warning to a friend saying that these foreigners had sworn to one another to murder all barbarians (all nations, that is, except themselves) with their physic. More than that, they said, adding insult to injury, that they would take money for doing so, and this would assist them greatly in dispatching other folk with even greater facility. He resented, too, the fact that the Greeks called his countrymen *opici* (country bumpkins). Being eighty-five when he wrote

this, and in the best of health, Cato had every reason for urging that "simples" out of the garden satisfied every need of physic.

"There is this mischief besides that there is no law or statute to punish the ignorance of blind Physicians though a man lost his life by them, nor has a man ever had revenge or recompense for misusage under their hands. They learn their skill by endangering our lives, and they do not mind killing us to make experiments of their medicines. In a word, the Physician is the only person who can murder a man and get clear away with impunity. But say that one is so bold as to charge them with untoward dealing, they immediately cry out on the poor patients and find fault with them for their unruliness, distemperature, wistfulness and I know not what; and thus the silly fools that are dead and gone are shent and bear the blame.

"Surely we are well enough served and may thank none but ourselves so long as none of us cares to know what is good for his life and health. We love to walk with other men's feet. We read; we look by the eyes of others; in the very main point of all we commit our bodies and lives to the care and industry of others. I do not mean to waste reproof on the base, abject and ignorant sort of Physicians; how little order they observe in the cure of diseases, or in the use of hot baths; how imperiously they prescribe most strict diet to their patients and when they are ready to faint and die under their hands for want of sustenance how they are forced to cram them, as it were, and give them meat upon meat, often before they have digested the former viands: how they do and undo, altering the treatment a thousand ways, making a mish-mash and mingle-mangle of victuals beside a deal of mixtures and compositions of drugs and ointments. I myself have seen those that go for Physicians put frequently in their medicines Minium (red lead), which is no better than rank poison, instead of Lidian Cinnabar, and all because they make an error in the proper signification of words.

"Some practices, harmless as they seem to be, have been the overthrow of all virtue and good manners in our Roman State; such as the things we do when we are quite well, grease and anoint ourselves, which is a preparation for wrestling. And what should I say of their dry stoves, hot houses and ardent baths which these Physicians advise to be so good for digestion of food in their stomachs? Yet I could never see any coming forth on his own

feet but he was heavier and found himself feebler than before he went in. And as for those who have been more observant of their rules than the rest, I have known many carried out for dead, or else extremely sick: to say nothing of the potions to be taken in a morning fasting, and the pitch-plasters devised to pluck away the hair from where Nature has ordained it to grow. In short, we may conclude that considering the enormities and corruptions which have crept into our life by means of physic, Cato was a true prophet when he said that it was sufficient to look cursorily into the writings and witty devices of the Greeks without learning them thoroughly. Thus much I have thought worth speaking of in justification of the people of Rome that they continued not without great reason six hundred years without the entertainment of Physicians, and against that Art which of all others is most dangerous and fullest of deceit, in that it has blinded the eyes of good men in the foolish opinion that nothing is good for the health of man except that which is costly and precious. I shall not therefore insert the rare receipts reported to be made of the ashes of the bird Phoenix and her nest; for I know it to be merely fabulous, however great a pretence of truth it might seem to carry." [15]

This passage at any rate shows that Pliny was not so credulous after all.

The trouble of which he is speaking had started with the wise men of the East and their arts and devices. King Mithridates had introduced into Rome many of the arts of magic, which embraced obscure branches of medicine. One of his prescriptions, found by Pompey in a private cabinet after his defeat, was warranted to ensure a man against the effects of poison. The ingredients were two dried walnuts, two figs, and twenty leaves of rue pounded together (with the addition, one reads with a start of surprise, of "a grain of salt") to be taken fasting.

The walnut was an important component of the mixture as it came under the Doctrine of Signatures; the principle, that is, of the resemblance of the nut to the convolutions of the brain by which was clearly indicated a specific for mental disturbances. Other instances of the doctrine can be found in the Viper's Bugloss, a specific for snake bite, from the spots

on the stem and the seeds which resembled a viper's head; also in the St. John's Wort, a well-established remedy for healing wounds, signified by the holes in the leaves and the flowers which, when dead, suggested drops of blood.

Associations of the same kind with animals were equally common. The hare (owing to a play on words connecting it with grace and beauty) was believed, when eaten, to be a cure for sleeplessness and to bestow the gift of beauty; a reference, presumably, to beauty sleep. Various nauseous parts of elephants, lions, hyænas, camels, crocodiles and chameleons were brought into the pharmacopœia. As many as seven remedies were derived from the rhinoceros. The strangest of these remedies was the employment of the ashes derived from rhinoceros skin as a hair-restorer, all the more humorous because the beast itself was so little hirsute.

The rhinoceros, it may be remarked, is still a "kill" of considerable value to the native hunter for its horn, which in the form of a powder is supposed to have alleviative properties, and also for the blood and other constituents of the animal.

Obviously the mental factor entered, and still enters, largely into the success of these remedies. The more unpleasant they were, the more likely to be efficacious. The honey in which the bees had died was recommended for abscesses; a vulture's lungs for spitting blood; infants were given boiled mice with their food. Of some strange preparation of beetles, Pliny exclaims in high disgust; "And yet by Hercules! Diodorus tells us that he has administered this remedy internally, with resin and honey, for jaundice and hardness of breathing; such unlimited power has the medical art to prescribe as a remedy whatever it thinks fit." When it comes to the magical property of the toe of a horned owl to be attached to the body as a cure for fever, he again bursts forth: "Who, pray, could ever have made such a discovery as this? And what, too, can be the meaning of the combination? Why, of all things in the world, was the toe of a horned owl made choice of?" Yet they say that Pliny was not critical.

To come to more normal remedies, the virtues of an excellent ointment for bruises is vouched for:

"Thapsia is singularly good for the shedding and falling out of the hair; also against the black and blue marks remaining after stripes. Nero Cæsar, the Emperor, in the beginning of his Empire conferred considerable celebrity on the plant. For using (as he did) to be a night-walker and to make many riots and much misrule in the dark, he would occasionally come across those who would beat him so hard that he carried away black and blue marks on his face. But (as he was subtle and desirous not to be talked about) he had an ointment made of Thapsia, Frankincense and Wax with which he anointed his face and by the morning came abroad with a clear skin and no marks to be seen, to the great astonishment of all who saw him." [16]

Blackberries and raspberries, it is pleasant to find, were good as a lotion for bloodshot eyes and Saint Anthony's fire, or erisipelas. Taken inwardly, they were "very comfortable to a weak stomach". It is unusual to find in the ancient regime so gentle a treatment recommended.

We now come to more definite forms of medical practice. Water cures were extremely popular. Just as the earth is beholden to water for her strength and virtue, so mankind also, it was held, can benefit from it. Cicero's house was converted into a hydropathic establishment. At Naples, too, there were medicinal springs of brimstone, alum, salt, nitre and bitumen and others partly sour and partly salt.

"Some of them also serve as a stouph or hot house, for the steam and vapour arising from them is wholesome and profitable for our bodies; and so hot are they that they heat the baths and are able to make the cold water in our bathing tubs boil again. Some are so hot that by them you can seeth an egg or any other viand or cates for the table. Now to decipher their virtues in physic they generally serve for infirmities of the sinews, for gout of the feet and sciatica, for dislocations of joints and fractures of bones. Others have a property to loosen the belly, heal wounds and ulcers or accidents of the head and ears. Among the rest, those which bear the name of Cicero are sovereign for the eyes. These belong to a memorable manor or fair house of pleasure situated on the sea

side in the highway leading from the lake Avernus to the city of Puteoli. It is much renowned for the grove or wood about it, as also for the stately galleries, porches, alleys and walking places adjoining which set out and beautify the place. This goodly house M. Cicero called Academia from a resemblance to a college of that name in Athens from which he took the model and pattern. There he compiled those books of his which carry the name of the place and are called *Academicae quaestiones*, and there he caused his monument to be made as if he had not sufficiently immortalised his name throughout the world by the noble works he wrote and commended unto prosperity. Well, soon after Cicero's death, this house and forest fell into the hands of A. Vetus and then in the very forefront and entry of the place there were discovered certain hot fountains medicinable and wholesome for the eyes. I will set down part of an Epigram which is worthy to be read not only there, but everywhere.

> Of late also, fresh fountains here break forth out of the ground,
> Most wholesome for to bathe sore eyes, which erst were never found.
> These helpful springs, the Soil no doubt, presenting to our view,
> To Cicero her ancient lord, hath done this honour due;
> That since his books throughout the world are read by many a wight,
> More waters still may clear their eyes, and cure decaying sight."

[17]

On the merits or otherwise of water for drinking purposes, the physicians agreed to differ. Rain-water was rather too light; they therefore preferred snow-water. Ice-water was more of a delicacy. Water from the earth was heaviest; but, as Pliny justly remarks, how can the sense and feeling of the stomach determine these things? Nero used to boil the water and then put it in a glass bottle surrounded with snow in order to draw any evil quality out of it.

Salt was good for preserving food and for whetting the appetite. It was regarded as a necessary element for the maintenance of life, for the mirth of the heart, for lightsomeness of mind, repose and contentment. Hence various honours and dignities bestowed on brave men were called Salaries. Sacrifices and oblations to the gods were never performed without a cake of meal and salt.

The amulets worn were often sufficiently disagreeable. They remind us of the contents of the shop of Mr. Venus, in *Our Mutual Friend.*

"The dust or sand in which a hawk or bird of prey has basked or bathed herself is singularly good for the quartan ague if the patient wear it in a linen cloth tied with a red thread. Then, the longest tooth in the head of a coal-black dog is very proper for this purpose. There is a kind of bastard wasp which usually flies alone and not in troops as others do; this, if it is caught with the left hand and hung round the neck under the chin, cures quartans, as some magicians say. Others attribute this effect to the first wasp a man sees in the current year.

"There are some who lap a caterpillar in a little piece of linen cloth and bind it with linen thread, making three knots and saying at the knitting of each knot that they do this to cure him or her of a Quartan fever. Others carry about them a naked snail or slug in a little piece of fine leather, or else four heads of snails cut off and enclosed in a small reed. Some of these Magicians direct to take four gadfly grubs enclosed in a Walnut shell and bind them to some part of the patient. Others put a live spotted Lizard in some little casket or box and lay it under the pillow or bolster where the patient lays his head: but when the ague begins to go away they let the Lizard go free again." [18]

In order to become invisible the following ingredients were necessary—the tail and head of a dragon, the hairs of a lion's forehead, the marrow of that animal, the foam of a horse that has won a race, and the claws of a dog's feet. These were to be tied up in a deer's skin and fastened alternately with the sinews of a deer and a gazelle. After such an experience, it is refreshingly simple to learn that cobwebs were known to be a good application to stop bleeding after shaving.

The history of physicians, so Pliny tells us, began with Æsculapius, who restored Hippolytus to life and was struck dead with lightning by Jupiter for his presumption. He was followed by Hippocrates, who was answerable for the kind of Physic which was called "Clinic" (the meaning of the word being that he visited his patients in bed). His patients found this innovation so agreeable that they were prepared to pay

large fees for the privilege of being attended by him. Later there arose a sect of physicians who called themselves Empirics, because they grounded their work entirely on experience.

Herophilus then appeared on the stage. His contribution to the medical art was that he "reduced the pulses, or beating of the arteries, to times and measures in Music, according to the age of the patient." That was considered to be too mathematical and learned a method for general practice and soon dropped out—to be revived later.

The most successful physicians earned enormous incomes. Q. Stertinius complained of the emperors whom he served that he had no larger revenues than half a million sesterces a year. He and a brother spent huge sums on building fine houses, yet were able in the end to leave thirty millions to their heirs.

Thessalus was a physician also of the richer sort, who made a great show when he passed with his train along the streets. Crinas of Massilia used astrology with much success and did not allow his patients to eat or drink except with punctilous regard to times and seasons. He bequeathed ten millions. Then—

"all of a sudden one M. Charmis, a Massilian likewise, entered the city of Rome and not only condemned the former proceedings of the ancient Physicians but put down the baths and hot houses. He brought in bathing in cold water and persuaded folk to use the same even in the middle of Winter. Nay, he feared not to give direction to his sick patients to sit in tubs of cold water. I assure you I have myself seen ancient Senators, such as had been Consuls of Rome, all chilling and quaking, yea and stark again for cold, in these kind of baths; and yet they would seem to endure the same to show how hardy they were. There is a Treatise extant by Seneca in which he highly approves of this course. Undoubtedly such Physicians as these who won credit and estimation by such novelties and strange devices, shoot at no other mark but to make merchandise and enrich themselves with the hazard of our lives. From this come these lamentable and woeful consultations of theirs about their patients, wherein you will see them argue and disagree in opinion, while one man cannot abide another man's judgment seeming to carry away the credit of the cure. Hence

arose the Epitaph of him (whoever he was) that caused these words to be graven on his unhappy tomb, *Turba medicorum perii*, that is, The variance of a sort of Physicians about me was the cause of my death. Thus you see how often this art from time to time has been altered and how it is still daily turned like a garment new dressed and translated. For whenever one of these newcomers can vaunt his own cunning with brave words, straightway we put ourselves in his hands and give him power to dispose of our life and death at his pleasure, and without further regard are as obedient to him as a soldier to his captain and general of the field. A strange matter that we should do so considering how many thousands of nations there are that live in health well enough without these Physicians, although not altogether without medicine. Such, for instance, was the Roman people who continued for six hundred years after the foundation of their city without knowing what a Physician meant. But afterwards they took a great fancy to Physic also, although upon some little experience of it they were as ready to loathe and condemn it as they had been desirous before to have a taste and trial of it." [19]

It is not difficult to see that Asclepiades was greatly appreciated in an age when physicians tended to bully their patients and make them suffer unnecessarily. He favoured simpler and pleasanter measures and was the first to adopt the policy of finding out what his patients wanted and insisting on their having it.

"He laid down that there were only five principal remedies which served for all diseases in common; to wit, in Diet, Abstinence in meat, Forbearing wine, Rubbing of the body and the Exercise of riding on horseback or in a carriage. He so far prevailed with his eloquence that everybody gave ear and applauded his words, because they were ready enough to believe those things to be true which were easiest, and because they saw it was in everybody's power to perform what he recommended. So by this new doctrine of his he drew all the world into a singular admiration of him as of a man descended from heaven to cure their griefs and remedies. In addition to this he had a wonderful dexterity to follow men's humours and content their appetites by promising and allowing the sick to drink wine, also in giving them cold water when he saw the opportune moment, and all to gratify his Patients. And

just as Cleophantes had the reputation among the ancients for bringing wine into favour and setting out its virtues, so Asclepiades, desirous to grow into credit and reputation by some new invention of his own, brought up the allowing of cold water to sick persons: and (as M. Varro reports) took pleasure in being called the Cold-water Physician.

"He had besides other pretty devices to flatter and please his Patients. At one time he would cause them to have hanging litters or beds like cradles so that by moving and rocking to and fro he might either send them to sleep or ease the pains of their sickness. At other times he ordered the use of baths, a thing he knew folk were most desirous of; and there were besides many other fine conceits very plausible in hearing and agreeable to man's nature.

"One thing we Romans may well be ashamed of, that such an old fellow as he, coming out of Greece (the vainest nation under the sun) and beginning as he did from nothing, should (only to enrich himself) lead the whole world on a string and all of a sudden set down rules and orders for the health of mankind—laws, be it remembered, which have been as it were repealed and annulled by many that came after him. And indeed Asclepiades had many helps which favoured his opinion and new Physic, namely, the manner of curing dieases in those days which were exceedingly rude, troublesome and painful. For instance, there was much ado in lapping and covering the sick with a deal of clothes, and causing them to sweat by every possible means. Such a work, too, they made sometimes in chafing and frying their bodies against a good fire; or else in bringing them abroad into the hot sun which could hardly be found within such a shady and close city as Rome. Instead of that, not only at Rome but throughout all Italy, he followed men's humours in approving the artificial baths and vaulted stoves and hot-houses which then were newly used excessively in every place by his approbation. Moreover, he found means to alter the painful curing of some maladies, such as the quinzy, in the healing of which other Physicians before him went to work with a certain instrument which they thrust down into the throat. He condemned also (and worthily) that dog-physic which was so general in those days that if a man ailed ever so little he must by and by cast and vomit. He blamed also the use of purgative potions as contrary and offensive to the stomach; in which matter he had great reason and truth on his side." [20]

CHAPTER IV

Of Animals

THE Eighth Book of the *Natural History* contains "the natures of land beasts that go on foot", which may be taken as the ancient rather than the modern definition of animals. A list of twenty Latin authors (including Virgil) is given; and forty-five " foreign writers" mainly Greek, with four Kings amongst the number—Juba, Attalus, Philometer, and Archelaus—showing how the scientific interest extended to all classes. In this book alone " the principal matters, stories and observations worth the remembrance" amount to 788, of which only the briefest selection can be given.

Of all the authors mentioned the name of Aristotle stands pre-eminent. He lived from 384 to 322 B.C. and was the first naturalist to systematise his knowledge; in fact, he was the first evolutionist.[1] He made a *scala naturæ*, or "ladder of

[1] Amongst the Romans, Seneca, a contemporary of Pliny, twenty years his senior, stands alone as an original thinker on the problems of nature. He, too, in his *Quæstiones Naturales*, recognised to a surprising extent the principle of evolution in its universe, as will be seen from the following passage: "Whether the world is a soul, or a body under the government of nature, like trees and crops, it embraces in the constitution all that it is destined to experience actively or passively from its beginning right on to its end. It resembles a human being, all whose capacities are wrapped up in the embryo before birth. Before the child has seen the light of day the principle of beard and grey hairs is innate. Although small and hidden, all the features of the whole body and of every succeeding period of life are there hidden. In like manner the creation of the world embraces sun and moon, stars with their successive phases, and the birth of all sentient life. All elements will aid nature to ensure that nature's decrees may be executed".

One of the Decrees of Nature to which he looked forward was a general conflagration of the universe, when the elements of the earth would all be dissolved in heat or utterly destroyed, so that the new creation might be able to usher in an age of innocence when a better race of men would inhabit the globe, and prosperity and peace would reign. This idea was destined to have a definitely religious significance on later ages and probably was a factor in the mistaken view taken that Seneca was himself a Christian, whereas both he and Pliny were Stoics, believing in a God whom they identified with Nature—an omnipotent and all-wise creator.

nature", which ingeniously registered a progression in nature from plants and sponges through crustaceans, reptiles, insects, birds and fishes up to mammals and finally to man. Man was alone credited with reasoning power and the possession of thoughts capable of influencing his actions and movements. The basis of life in his theory was some powerful and vitalising principle, a conception opposed to the mechanist theory which gained such wide favour in the last century.

Pliny accepted the general implication of Aristotle's scheme, without perhaps appreciating to the full its scientific significance. His motive was merely to render a version of science intelligible to the common reader. He therefore attacked the problem from the simple utilitarian point of view of insisting upon the belief that everything in nature has its own particular use and that it is man's business to discover it. Bees, for example, were charged with the obligation to supply honey; a view cordially endorsed by Mr. Harold Skimpole. Locusts, in spite of their destructive habits, were eaten as good food in Parthia, a delicacy fit for a king and served at the royal table. In India, where so many marvels abounded, it was reported that their bodies were large enough to be used for saws when properly dried. By the same process of reasoning silkworms were created to supply silk for the ladies of Rome; and the mission of sheep was obviously to provide wool for clothes, tapestries and carpets.

The importance to the world of Alexander's conquests had been incalculable. Natural history would have lost half its interest without the information—often fallacious, but none the less stimulating to the imagination—gleaned from India and the East. Such questions were mooted as the connection between the waters infested by the crocodiles in the Indus and the Nile. Did it mean that the rivers had a common source? In the state of knowledge at the time the world was full of untold possibilities and men were thirsting for the latest marvels that might be forthcoming. Aristotle himself had been Alexander's tutor; no doubt he had fired his boyish enthusiasm for collecting every kind of information about

living things. When he grew up, so Pliny tells us, Alexander commanded thousands of men—hunters, falconers, fowlers and fishers, foresters, park-keepers and warreners, the keepers of herds of cattle, fish-pools, bees and poultry—throughout Asia and Greece to keep Aristotle informed of every creature known in the world. From this material were compiled nearly fifty books of *De Animalibus*—the great text-book from which Pliny so freely borrowed.

The classification of animals was at first tentative. Many reptiles were included, amongst them lizards, frogs, snakes, and particularly the crocodile.

Although improperly ranked among the animals (yet within the definition of a "land beast that goes on foot") the crocodile deserves attention because it excited such a remarkable interest. In the Book of Job it is one of the wonders of creation recorded in the speech of the Almighty; and in Egypt it was worshipped. Pliny's description is particularly vivid: "a venomous creature, four-footed, as dangerous upon water as the land. This beast alone, of all other that keep the land, hath no use of a tongue." This absence of a tongue increased the reverence of the Egyptians as a noble quality typifying the eternal silence. "He only moves the upper jaw or mandible, wherewith he bites hard; and he is otherwise terrible because of the course and rank of his teeth which close one within another, as if two combs grew together." Pliny also borrows from Herodotus to the effect that the eggs are the size of those of geese and that the male and female sit on them in turn. Their skin is hard enough, he says, reverting to an old argument, "and yet who would deny that crocodiles were very witty?" He also gives the full story of the sandpiper which feeds on the leeches in the crocodile's mouth. But he adds a less authenticated tale of the rat which seizes a favourable moment for a decisive onslaught.

"When he has filled his belly with fishes he lies to sleep on the sands. And since he is a great and greedy devourer, some of his meat sticks between his teeth. In regard whereof a little bird, called Trochilos, comes and for her victual's sake hops first about his mouth, falls to pecking and picking it with her little neb or

bill, and so forward to the teeth which she cleans. And to make him gape she gets within his mouth, which he opens the wider, because he takes such delight in her scraping and scouring of his teeth and jaws. Now when he is lulled, as it were, fast asleep with his pleasure and contentment the rat of India, or Ichneumon, spies his vantage and seeing him lie thus broad gaping, whips into his mouth and shoots himself down his throat as quick as an arrow and then gnaws his bowels, eating a hole through his belly and so killing him."[1] [21]

Another thick-skinned creature of greater dimensions and also of unimpeachable sagacity was the elephant, reckoned to be second only to man in point of intelligence:

"Elephants understand the language of the country in which they are bred; they do what they are commanded; they remember the duties they are taught and take a pleasure and delight both in love and glory. More than this, they embrace goodness, honesty, prudence and equity (rare qualities, I may tell you, to be found in men) and hold in religious reverence the stars, planets, sun and moon. Indeed writers say of them, that when the new moon begins to appear fresh and bright, they come down in herds to a river named Amelus, in the deserts and forests of Mauritania, where after they are washed and solemnly purified by sprinkling and dashing themselves all over with the water, and have saluted and adored after their manner that planet, they return again into the woods and chases, carrying before them their young calves that are weary and tired. Moreover they are thought to have a sense of religion in others; for when they are to pass the seas into another country, they will not embark except under an oath of their governors and rulers that they shall return again. And some of them have been seen, being enfeebled by sickness (for big as they are they are subject to grievous maladies), to lie on their backs, casting and flinging herbs up to heaven, as if deputing the earth to pray for them.

[1] The confusion with regard to the reptiles among the ancients is illustrated by Mandeville when he mentions serpents, dragons and crocodiles all together. "These cockodrills be serpents, yellow (hence the derivation of the name from the crocus plant) and rayed above, and have four feet and short thighs, and great nails as claws or talons. And there be some that have five fathoms in length, and some of six and of eight. And when they go by places that be gravelly, it seemeth as though men had drawn a great tree through the gravelly place."

"The first time harnessed Elephants were seen at Rome was in the time of Pompey the Great, after he had subdued Africa, for then two of them were put in gears to his triumphant chariot. Coupled as they were, two in one yoke, they were not able to go in at the gates of Rome.[1] At the exhibition of gladiators which Germanicus Cæsar gave to gratify the people, the Elephants were seen to leap and keep a stir, as if they danced after a rude and disorderly manner. It was a common thing to see them fling weapons and darts in the air so strongly that the winds had no power against them; also to meet together in fight like sword-fencers and to make good sport in a kind of Pyrrhic dance; afterwards to walk on ropes and cords and carry (Four together) one of them laid at ease in a litter. Last of all, some of them were so nimble and well practised that they would enter a hall or dining place where the tables were set full of guests, and pass among them so gently and daintily, weighing their feet, at it were, in their going, so that they should not hurt nor touch any of the company as they were drinking.

"It is known for certain that once on a time an Elephant, who was not so good at his lessons to learn what was taught him, was beaten and beaten again for that blockish and dull head of his and was found studying and conning during the night the feats which he had been learning in the daytime. One of the strangest things is that they can not only walk up the tight-rope backwards, but can slide down again with their heads forward. Mutianus, a man who had been Consul three times, informs us that one of these animals had learned to make the Greek characters and would write down in that language: 'This I have written and made an offering of the Celtic spoils'. He also says he himself saw at Puteoli a ship discharged of Elephants; but when they were to be set ashore and forced to leave the vessel, for which purpose a bridge was made for them, they were frightened at the length of it, and so to deceive themselves that the way might not seem so long, they went backwards with their tails to the bank and their heads toward the sea.

"They know that their only riches (for love of which men lay in wait for them) lie in the arms and weapons which Nature has given them. King Juba calls them their horns; but Herodotus, who wrote long before him, has much better termed them Teeth.

[1] Plutarch says that Pompey, when Sylla opposed his having a triumph, was determined to have his triumphant chariot drawn by four elephants, 'having brought over several which belonged to the African kings". But the gates of the city proved to be too narrow so he had to be content with horses.

Therefore, when they are shed and fallen off, either from age or some calamity, the Elephants hide them in the ground. This, indeed, is the only ivory, for all the rest covered within the flesh is of no price and is taken for no better than bone. And yet of late from the great scarcity of the right teeth men have been glad to cut and saw their bones into plate and make ivory of them.

"We hardly get teeth of any bigness unless we have them out of India: for all the rest that might be got in this part of the world between us and them have been employed in superfluities only and served for wanton toys. You can tell young Elephants by the whiteness of their teeth and they have a special care and regard for them. They look to it the point of one of them is always sharp, and they therefore forbear to use it lest it should be blunt against the time when they come to fight. The other tooth they use ordinarily, either to get roots out of the earth or to cast down any banks or mures that stand in their way. When they happen to be surrounded by hunters they set in the front rank those of the herd that have the least teeth, to the end that their price might not be thought worth the hazard and venture in chase of them. But afterwards, when they see the hunters eager and themselves overmatched and weary, they break them by running against the hard trees and in leaving them behind escape by this ransom, as it were, out of their hands.

"Elephants always march in troops. The eldest of them leads the vanguard, like a captain, and the next in age comes behind with the conduct of the rearguard. When they are to pass over a river they put foremost the smallest of the company for fear that if the bigger should enter first they would by treading in the channel make the water rise and swell and so cause the ford to become deeper. Antipater writes that King Antiochus had two Elephants which he used in his wars and called them by famous surnames which they knew well enough when they were called by them.

"And Cato in his Annals gives the names of the principal captain Elephants and has left it on record that the elephant which fought most lustily in the Punic war was called Surus, by the token that one of his teeth was gone. When Antiochus once on a time was sounding the ford of a river by sending the Elephants first, "Ajax', who always lead the way, refused to take the water. Upon which the king pronounced with a loud voice that the Elephant which

passed to the other side should be the captain and chief. Then 'Patroclus' gave the venture and for his labour was given a rich harness and was all trapped in silver (a thing wherein they take most delight) and was made besides the sovereign of all the rest. But the other who was thus disgraced and had lost his place, would never eat any more, and died for very shame of such a reproachful ignominy.

"Only the tamed sort serve in the wars and carry little castles or turrets with armed soldiers to enter the squadrons and battalions of the enemy. For the most part all the service in the wars of the East is performed by them and they especially determine the end of the quarrel. For they break the ranks, bear down the armed men that are in the way and stamp them under foot. These terrible beasts (outrageous otherwise as they seem) are frightened by the least grunting of a hog, and if they are wounded at any time or put into a fight they always fall back and do as much mischief to their own side that way as to their enemies. The African Elephants are afraid of the Indians and dare not look at them, for in truth the Indian Elephants are far bigger.

"There is a famous combat told of a Roman with an Elephant at the time when Hannibal forced the captives he had taken of our men to fight each other to the death. The only Roman that remained unslain in that unnatural conflict he must needs match with an Elephant and see the combat himself, assuring him upon his word that if he killed the beast he should be sent home with life and liberty. So this prisoner entered into single fight with the Elephant and to the great heart's grief of the Carthaginians slew him outright. Hannibal then sent him away according to his promise; but on considering the consequence of this matter, that if this combat was bruited abroad by him the beasts would be less regarded and their service in the wars not esteemed, he sent certain light horsemen after him to cut his throat and so make him sure for telling tales.

"In the second consulship of Cn. Pompeius, at the dedication of the temple to Venus Victrix, twenty elephants or, as some say, seventeen fought in the great show place. In this solemnity the Gaetulians were set to launch darts and javelins against them. One Elephant did wonders, for when his legs and feet were shot and stuck full of darts he crept upon his knees and never stopped till he got among the companies of the Gaetulians, where he tore from them their targets and bucklers, flung them aloft in the air, and as

they fell they turned round and round as if they had been trundled by art and not hurled with violence by an angry beast. This made a goodly fight and did great pleasure to the beholders.

"Once the Elephants got among the people, notwithstanding that they were outside the lists which were set round with iron gates and bars. (For this reason Cæsar the Dictator, when he was to exhibit a show before the people cast a ditch round the place, letting in the water and so made a moat of it, which prince Nero afterwards stopped up in order to make more room for the Knights and men of arms.) But those Elephants of Pompey, being past all hope of escaping, seemed to make moan to the multitude, craving mercy and pity with grievous plaints and lamentations; so much so that the people's hearts turned again at this piteous sight, and with tears in their eyes for very compassion they all rose up from beholding this pageant, without regard of the person of Pompey, that great General and Commander, without respect of his magnificence and stately show by which he thought to have won great applause and honour at their hands, but instead of that fell to cursing him and wishing all those plagues and misfortunes to light upon his head which soon after ensued accordingly.

"Moreover, Cæsar in his third Consulship exhibited another fight and brought twenty Elephants to skirmish against 500 footmen; and a second time he set out twenty more, with wooden turrets on their backs, containing sixty defendants apiece, opposing to them 500 footmen and as many horse." [22]

In the Punic wars the elephant was a prominent figure. To embark 140 of these unwieldly creatures in the vessels then in use, as the Carthaginians managed to do, and to transport them safely in a voyage of over 100 miles was a marvel only to be emulated later on by the Romans who shipped lions, tigers and leopards across the sea for the entertainment of the populace at the games.

Herodotus, Aristotle and Pliny all agree that lions were found in Europe, chiefly in what is now known as Balkan territory. They were reckoned as certainly less sagacious than elephants; but in point of nobility of character they held a higher reputation. It may be noted that they were the only creatures besides horses and human beings which possessed the gift of tears:

"That great Philosopher Aristotle reports that the Lioness at her first litter brings forth five whelps and, every year after, one less; and when she comes to bring but one alone, she gives over and becomes barren. Her whelps are at the first without shape, like small gobbets of flesh, no bigger than weasels. When they are six months old, they can hardly walk, and for the first two, they stir not at all. There are Lions also in Europe (but only between the rivers Achelous and Nestus) and these are far stronger than those of Africa or Syria. Moreover, there are two kinds of Lions; the one short, well trussed and compact, with manes more crisped and curly, but these are timorous and cowards compared with those that have long and plain hair, for these have no fear of wounds.

"The Lion alone of all wild beasts is gentle to those who humble themselves to him and will not touch any such upon their submission, but spares whatever creatures lieth prostrate before him. Fell and furious as he is at other times he discharges his rage upon men before he sets on women, and never preys on babes unless it is from extreme hunger. I have heard it reported for a fact by a female slave of Getulia that she had pacified the violent fury of many Lions within the woods and forests by fair language and gentle speech. She had been so hardy as to say, in order to escape their rage, that she was a silly woman, a banished fugitive, a sickly, feeble and weak creature, a humble suitor and lowly suppliant to him, the noblest of all living creatures, the sovereign and commander of all the rest, and that she was too base and not worthy that this glorious majesty should prey upon her. Many different opinions are current about savage beasts being dulced and appeased by good words and fair speech; as also that fell serpents may be trained and fetched out of their holes by charms and certain conjurations and menaces. But whether it is true I do not see it set down and determined by any man.

"To return to our Lions, the sign of their intent and disposition is their tail and, like as in horses, their ears. For when the Lion stirs not his tail he is in a good mood, gentle, mild, pleasantly disposed and as if he were willing to be played with. But in that fit he is seldom seen, for his most frequent state is to be always angry. At the first when he enters into his choler he beats the ground with his tail. When he grows into greater heats, he flaps and jerks his sides, as it were to quicken himself and stir up his angry humour. His generosity and magnanimity he shows most in his dangers,

for he defends himself a long time with the terrible aspect of his countenance only. But his noble heart and courage is seen also in this that, however many hounds and hunters there are following after him, so long as he is out in the open, he comes to a stand every now and then as he makes his retreat, as though he contemned both dog and man. But when he has gained the thickets and woods and once got into the forests out of sight, then he runs amain for life, knowing full well that the trees and bushes hide him and that his shameful dislodging and flight are not then seen. If he chance to be wounded, he has a marvellous eye to mark the party that did it, and however many in numbers the hunters may be, he runs on him only. As for him who lets fly a dart at him and misses his mark and does no hurt, if he chance to catch him he touzes, shakes, tosses and turns him lying at his feet but does him no harm besides. Lions are not at all crafty and fraudulent, neither are they suspicious. They never look askew but always cast their eyes directly forward, and they do not like any man to look sidelong upon them. It is constantly believed that when they lie a-dying they bite the earth and in their very death shed tears. This creature, noble as he is, and so cruel and fell, trembles and quakes to hear the noise of cart-wheels or to see them turn round. Nay, he cannot of all things abide chariots when they are empty. He is also frightened at a cock's comb and much more at his crowing. But most of all is he frightened at the sight of fire.

"The taking of Lions in old time was a very hard piece of work and was commonly in pitfalls. But in the days of the Emperor Claudius it happened that a shepherd from Gaetulia taught the manner of catching them; a thing that otherwise would have been thought incredible and altogether unworthy the name and honour of so goodly a beast. This Gaetulian, I say, happened to encounter a Lion; and when he was violently assailed by him made no more ado than to throw his mandilion or cassock full upon his eyes. This feat of his was soon practised in the open show-place, in a way that a man would hardly have believed if he had not seen it, that so furious a beast should be so easily daunted as soon as he felt his head covered, were the things ever so light; making no resistance but suffering one to bind him fast, as if all his spirit rested in his eyes. It is therefore less to be marvelled at that Lysimachus strangled a Lion when by the order of Alexander the Great he was shut up alone with him.

"The first that yoked them at Rome and made them draw in a chariot was M. Antonius. It was in the time of civil war, after the battle of Pharsalia, a shrewd omen for the future event when generous spirits were about to be subdued. For what should I say of Antony riding in that wise with the courtesan Cytheris, a common Actress in Interludes upon the stage? To see such a sight was a monstrous spectacle that passed all the calamities of those times.

"It is said that Hanno (one of the noblest Carthaginians that ever were) was the first man who dared handle a Lion with his bare hand and make him follow all over the city in a slip like a dog. But this trick of his cost him his undoing, for the Carthaginians thought it was a dangerous and ticklish point to put the liberty of so great a State as Carthage into the hands and management of him who could handle and tame the furious violence of so savage a beast, and so they condemned and banished him. We find in histories many examples of their clemency and gentleness seen on different occasions. Mentor the Syracusan happened in Syria to meet with a Lion who after an humble manner in token of obedience and submission tumbled and wallowed before him. He, astonished for very fear, started back and began to fly; but the wild beast still followed him and was ready at every turn to present himself before him, licking his footsteps as he went in flattering manner as if he would make love to him. Mentor at length was aware that the Lion had a wound in his foot and that it had swelled; whereupon he gently plucked out the spill of wood that had gotten into it and so eased the beast of his pain. This incident is represented in a picture at Syracuse.

"In the same way Elpis, a Samian, when he landed in Africa, chanced to spy near the shore a Lion gaping wide and seeming to whet his teeth at him in menacing wise. He fled apace to take a tree and called upon god Bacchus to help him (for we commonly fall to our prayers when we see little or no hope of other help). The Lion did not stop him in his flight, although he could have crossed the way well enough, but laying himself down at the tree root with that open mouth of his with which he had scared the man, made signs to move his pity and compassion. Now the beast had lately fed greedily and had got a sharp bone within his teeth which put him to much pain. Besides that, he was almost famished and looked pitifully up to the man and after a sort with dumb and mute

prayers besought his help. Elpis avised (considered) him a pretty while, and, beside not being very forward to venture upon the wild beast, he stayed the longer and made the less haste. At last he comes down from the tree and plucks out the bone, while the Lion held his mouth handsomely to him and composed himself to receive his helpful hand as fitly as he possibly could. In recompense of this good turn it is said that for as long as his ship lay there at anchor the Lion furnished him and his company with good store of venison, ready killed to his hand. And Elpis on his return dedicated a temple in Samos to god Bacchus. Can we marvel after this that wild beasts should mark the footsteps of man, seeing that in their extremity they have recourse to him alone for hope of succour? Surely the reason must be that grief, anguish, and extreme peril force even savage beasts to seek all means of help and relief." [23]

So much for the nobler animals. There were others that struck terror and were merciless. Macbeth when confronted by Banquo's ghost declared that he would sooner face either of three terrifying wild animals:

> "What man dare, I dare:
> Approach thou like the rugged Russian bear,
> The arm'd rhinoceros, or the Hyrcan tiger;
> Take any shape but that, and my firm nerves
> Shall never tremble."

There is little doubt that Shakespeare gleaned much of his natural history from Holland's translation. And yet the bear earned a comparatively mild reputation and, as we have seen, was, curiously enough, credited with the tenderest skull of any animal, the hardest being that of the parrot. It is a known fact that bears after they have passed the winter in seclusion are strict vegetarians for some time after they emerge. Pliny knew this too and gives his own explanation. He also hands on that curious account of the mother-bear and her method of licking the cubs into shape which has passed into a current phrase and was used by Pope in the couplet—

> "So watchful Bruin forms, with plastic care,
> Each growing lump, and brings it to a bear."

"The she-bear brings forth commonly five whelps at a time. At first they seem to be a lump of white flesh without any form, little bigger than rattons, without eyes and without hair, although there is some show of claws. This rude lump they fashion with licking into some shape little by little. If they happen to have no den, they build themselves cabins of wood, gathering together a deal of boughs and bushes which they lay artificially together so that no rain can enter, and they strew the floor with soft leaves. For the first fourteen days (after they have taken up their lodging in this manner) they sleep so profoundly that they cannot possibly be wakened even if a man should lay on and wound them. In this drowsiness of theirs they grow wondrous fat, and the grease and fat thus gotten is used in medicine and is particularly good for those who shed their hair. These fourteen days passed, they sit on their rump or buttocks and fall to sucking of their fore-feet and this is all the food on which they live for the time. Their young whelps, when they are stark and stiff for cold, they huggle in their bosom and keep close to their warm breast, very much like birds that sit on their eggs. It is a very astonishing thing, and yet Theophrastus believes it, that if a man takes bear's flesh during those days and cooks it, it will grow and increase in bulk. Now, when spring is come they go forth out of their den, but by that time the males are exceedingly overgrown with fat and the first thing they do is to devour a certain herb named Aron (that is, Wakerobin) and that they do to open their guts; and to prepare their teeth for eating they whet and set the edge of them with the young shoots and tendrons of the briars and brambles. They are often subject to dimness of sight, for which reason they seek after honeycombs, that the bees may settle on them and with their stings make them bleed about the head and by that means discharge them of the heaviness which troubles their eyes. When they choose they will walk on their two hind legs upright, and they creep down from trees backwards. There is not a living creature more crafty and foolish withal when it does a shrewd turn. We find it recorded that Domitius Ænobarbus exhibited 100 Numidian bears to be baited and chased in the great Circus and as many Ethiopian hunters. And I marvel that the chronicle mentions Numidian, for it is certain that no bears come out of Africa." [24]

On the subject of the rhinoceros and hippopotamus, both of them "river horses", the old naturalists were slightly mixed,

and it was mainly due to their somewhat confused impressions about these creatures that the unicorn was evolved later and achieved considerable notoriety. We are told that one of the great antipathies of nature existed between the rhinoceros and its sworn enemy, the elephant. It sharpened its horn against hard stones in preparation for battle and then charged straight at the elephant's belly " which he knows to be more tender than the rest". The following passage applies to the hippopotamus and the sagacity with which it can bleed itself when suffering from various indispositions:

"The river Nile brings forth another beast called Hippopotamus, taller than the Crocodile with a cloven foot like an ox. He has the back, mane and hair of a horse and he has his neighing also. His muzzle or snout turns up. His tail twines like the boar's and his teeth likewise are crooked and bending downwards, like the boar's tusks but not so hurtful. The skin or hide of his back is impenetrable (shields and headpieces of doughty proof are made of it that no weapon will pierce) unless it is soaked in water or some liquor. He eats the standing corn in the field; and folk say that he determines beforehand where he will pasture and feed day by day and that he enters the field backwards to prevent his being ambushed against his return or being followed by his footing.

"Marcus Scaurus in the plays and games which he gave in his Ædileship was the first man to make a show of one Water-horse and four Crocodiles, swimming in a pool made for the time during those solemnities. The River-horse has taught Physicians one device in their profession; for when he finds himself overgross and fat, by reason of his continual high feeding, he gets ashore out of the water, having spied where the reeds and rushes have been newly cut. Where he sees the sharpest and best pointed cane, he sets his body hard to it, to prick a vein in one of his legs, and thus by letting himself blood makes evacuation; whereby his body otherwise inclined to diseases and maladies is well eased of the superfluous humour. When he has done this he stops the orifice again with mud and so staunches the blood and heals up the wound." [25]

The tiger, the third of the fierce animals mentioned by Macbeth, is accounted a creature of incomparable swiftness, strength, ferocity and extreme quickness of movement. The

devotion of the tigress to her cubs was so great that she would pursue any hunters who carried them away and not cease the pursuit until they relinquished one of them. Then she would take the cub in her mouth, carry it back to her den, and return once more, when the same thing would happen. In the end she at last recovers the whole litter by this method of independent rescue.

Dogs and horses are represented as being more the friends and servants of mankind than the cats. It is curious to note the attempts to interbreed dogs with tigers as well as with wolves. As truly domestic animals dogs were the only beasts which knew the names of their masters and the houses to which they belonged. No other creatures had such long memories, and for hunting they were invaluable.

"They train the hunter who leads him by the collar and leash to the place where the beast lies. Having once gotten an eye on his game, how silent and secret are they! And yet how significant in their discovery of the beast to the hunter! First with wagging their tail, and afterwards with their nose, snuffing as they do. Therefore we do not wonder when hounds or beagles are over-old, weary and blind, if men carry them in their arms to hunt, to wind the beast and by the scent of the nose to show where the beast is at harbour. The Indians raise a breed between the dog and the tiger, and for this purpose tie up the bitches, when they go proud, and leave them in the woods for the male tigers. However, they do not rear the first or second litter of them, supposing that the dogs thus bred will be too fierce and eager: but the third they nourish and bring up.

"The Gauls do the same with the wolf and the dog, and in every chase and forest there are whole flocks of them thus engendered that have one dog for their guide, leader and captain. Him they accompany when they hunt, him they obey and are directed by, for they keep an order of government and mastership among themselves. In the voyage that Alexander the Great made in India, the King of Albania gave him a dog of an extraordinary bigness. Alexander taking great delight in so goodly and fair a dog let loose before it first Bears, afterwards wild Boars, and, last of all, fallow Deer. But this dog, making no reckoning of all this game, still lay couchant and never stirred or made at them. Alexander, a man of mighty spirit and high mind, offended at the laziness and coward-

ice of so great a body, commanded that he should be killed, and so he was. News of this presently went to the King of Albania, who sent him a second dog with this message: that he should not make trial of this one also against such little beasts, but either set a Lion or an Elephant at him: saying also that he had only those two of that kind, and if he were killed likewise, he was likely to have no more of that race and breed. Alexander made no stay but presently put out a Lion and immediately saw his back broken and rent and torn to pieces by the dog. Afterwards he commanded an elephant to be brought forth and never took a greater pleasure in any fight more than this. For the dog at once with his long rough shaggy hair that spread over his whole body, came with full mouth, thundering (as it were) and barking terribly against the Elephant. Soon after he leaps and flies upon him, rising and mounting against the great beast, now on one side, now on the other, maintaining combat right artificially, one time assailing, another time avoiding his enemy. So nimbly he bestirs him from side to side that with continual turning to and from the Elephant grew giddy in the head, insomuch that he came tumbling down and made the ground shake under him with his fall." [26]

Stories are told of dogs fighting in battle and of squadrons of mastiffs being placed in the vanguard. A good point is made of the cheapness of their equipment. "They were never known to draw back and refuse fight. They were the trustiest auxiliaries and were never so needy as to call for pay." As examples of faithfulness they would defend their masters when attacked and refuse to abandon the body of any whom they served. One man who was condemned at Rome for some offence was thrown down the *scalæ gemoniæ* (the Stairs of Wailing); but his dog would not leave the corpse and kept up a piteous howling in sight of the crowd which stood about to see the execution. When a piece of meat was thrown to the dog, he carried it to the mouth of his master lying dead below; and when the carcase was thrown into the Tiber the dog swam after it to prevent its sinking. Could devotion go further?

Horses and horse-racing were as popular in old days as they have ever been since. It is also a coincidence that almost every

great general in history seems to have been associated with a remarkable charger.

"Alexander the Great had a very strange and rare horse. It was called Bucephalus either for his crabbed and grim look, or else because of the mark of a bull's head which was imprinted on his shoulder. It is said that Alexander, when a child, on seeing this fair horse fell in love with him and bought him for sixteen talents. He would suffer no one to sit on him or come on his back except Alexander, and then he must have the King's saddle on and be trapped with royal furniture. This horse did a remarkable service in the wars; for when he was wounded at the assault of Thebes he would not suffer Alexander to alight from his back and mount upon another. Many other strange and wonderful things he did, and when he died the King solemnized his funeral most sumptuously, erected a tomb for him and built about it a city that bore his name, Bucephalia.[1]

"Cæsar Dictator likewise had another horse that would suffer no man to ride him but his master. It had his forefeet resembling those of a man and is so represented before the temple of Venus, Mother. Moreover, Augustus Cæsar made a sumptuous tomb for a horse that he had, on which Germanicus composed a poem. At Agrigentum there are seen Pyramids over many places where horses were entombed. The Scythians take a great pride in the goodness of their horses and Cavalry. A king of theirs happened to be slain by his enemy in single fight upon a challenge and when he came to despoil him of his arms and royal habit, the king's horse came upon him with such fury, flinging and laying about him with his heels, and biting, that he made an end of the conqueror's champion. Horses are so docile and apt to learn that we find in histories how in the Sybarite army the whole of the cavalry used to leap and dance to certain music that they were accustomed to. They have a foreknowledge when battle is toward; they will mourn the loss of their masters and sometimes shed tears and weep piteously for love of them. Philistus relates that Dionysius was forced to leave his horse stuck fast in a quagmire and got away. But the horse after he had recovered himself followed the tracks of his master with a

[1] Bucephalus, according to Plutarch, died at the age of thirty; and Alexander "was no less concerned at his death than if he had lost an old companion or an intimate friend". He also, we are told, built another city, and called it after the name of a favourite dog, Peritas, which he had brought up himself.

swarm or cast of bees settling in his mane. And this was the first presage of good fortune that induced Dionysius to usurp the Kingdom of Sicily.

"In the great race or Circus when they are set in their harness to draw the chariots we see how they rejoice in being encouraged and praised, showing how desirous they are of glory. At the Secular games, held by Claudius Cæsar, the horses with the white livery, in spite of their driver the charioteer being flung to the ground even within the bars at the starting-post, won the first prize and went away with the honour of the day. For of themselves they did all that could be done against the other competitors just as well as if a most expert chariot-man had been over their backs to direct and instruct them. Men were ashamed at the sight, to see their skill and art overmatched and surpassed by horses. Beside that, when they had finished the race they stood still at the goal and would no further.

"Our ancestors considered it a still greater wonder when in the Circensian games the horses, after the charioteer had been thrown, ran directly up to the Capitol as well as if he had stood still in his place and driven them; and there they fetched three turns round the temple of Jupiter. But I will now tell the greatest story of all, how the horses of Ratumenas who had won the prize in the horse-racing at Veii, threw their master down and came from Tuscany to Rome carrying the Palm branch and chaplet of Victory won by their master Ratumenas; from which the Ratumennian gate afterwards took its name.

"The Sarmatians when about to take a great journey prepare their horses two days before and give them nothing to eat and only a little drink and they will then gallop them 150 miles on end and never draw bridle. Horses live, many of them, fifty years; but the mares not so long, coming to their full growth in five years, while horses grow one year longer. The making of good horses and their beauty has been most elegantly described by the Poet Virgil. And I too have written of that argument in my book which I lately put forth concerning Tourneys and shooting from horseback, and I see that all writers agree in those points I have set down. But for horses that are trained for racing some considerations must be observed different from horses of other service, since in other employments they may be trained when they are two-year-old colts; but they are not admitted to the contests of the Circus till they are five years of age." [27]

It will be necessary to pass rapidly over bulls, camels, sheep and monkeys.

The bull-fighting of the ancients was bull against bull. The Thessalians were excellent cowboys and Cæsar made a success of a Rodeo Show with which he entertained the Romans. It appears that the Thessalians invented a way of galloping close to the bulls to take them by the horns; then they "wryth their necks down and so kill them".

In Egypt the ox was worshipped under the name of Apis. The beast chosen for the supreme honour must have a white spot on the right side and a mark like a beetle under its tongue. The priests drowned him after a fixed number of years, then went into mourning, shaving their heads out of exceeding sorrow, and proceeded to choose a successor. Apis was regarded as an oracle, and his movements were interpreted as of the greatest significance to the nation. He turned his head away from Germanicus when that Emperor offered him food; as a consequence Germanicus soon after died. Cambyses, too, the son of Cyrus, committed sacrilege by stabbing Apis, and himself suffered a wound in the same part of his body later on, to which he succumbed. In public processions the sacred ox was preceded by a company of pretty boys chanting canticles and songs in his honour and praise, at which, we are told, he was well pleased and contented to be thus worshipped. A short life but a merry one.

Camels—either with two "bunches" or only one—carried packs and served as cavalry in the wars. They could go four days without drink, and before they drank always trampled with their feet to raise mud and sand. Otherwise they took no pleasure in their drinking.

The Camelopard—a supposed cross between the camel and leopard—was the giraffe, and bore the compound name because it had white spots on a red ground and a head for all the world like a camel. It was necked like a horse and had feet and legs like the ox. In the Roman shows it was extremely popular and earned the title of a Savage Sheep.[1]

[1] Mandeville's description of the giraffes, which he calls "orafles" and the Arabians

Apes and monkeys were the closest imitators of men.

"They are marvellous crafty and subtle to beguile themselves; for whatever they see hunters do in front of them they will imitate them in every point, even to besmear themselves with glue and birdlime and shoe their feet within gins and snares and are caught by that means. Mutianus says he has seen Apes play at chess and tables, and that at first sight they could know nuts made of wax from others. He also affirms that when the moon is on the wane, the monkeys and marmosets (which in this kind have tails) are sad and heavy, but they adore the new moon, which they testify by hopping and dancing. All the She Apes are wondrous fond of their little ones and those that are tame in the house will carry them about in their arms as soon as they have brought them into the world; they will keep showing them to everybody and they take pleasure in having them dandled by others, as if they took it as a sign that folk rejoiced at their safe deliverance. Such a culling and hugging of them goes on that with it they often kill them." [28]

Baboons, with heads and long snouts like dogs, were the most cursed, shrewd and unhappy of monkeys, while the marmoset was the gentlest and most familiar. There seems little doubt that some of the larger apes were mistaken for strange races of men.

Having begun with elephants we end with mice. White mice were a favourable omen; and all rats, mice and dormice were providentially forbidden to be eaten at suppers and feasts. At the siege of Casilinum a rat was sold in the town for 200 sesterces and we learn that the man who bought it at that price lived, while the seller, for greediness of money, died of hunger.

Plagues of rats were known for their destructive habits. They were believed to devour everything, even iron and sometimes gold. Mice and rats also had a mysterious knowledge of the future and would desert a house about to tumble down

"gerfaunts", is curious and worth quoting. "It is a beast, pomely (dappled like an apple) or spotted, that is but a little more high than is a steed, but he hath the neck a twenty cubits long; and his croup and his tail is as of an hart; and he may look over a great high house."

(a habit more popularly associated with sinking ships), although the first intimation was always made by the spiders who, with their webs, would fall to the ground. Another animal with a quick sense was the fox which would never pass over a frozen river or pool without first trying the thickness of the ice by his ear. The inhabitants of Thrace for this reason never risked crossing the ice until they had seen the foxes venture forth and return again.

CHAPTER V

On Fabulous Creatures

It was the fashion in the Far East for certain creatures to preside over the elements—the Phœnix over fire, the Tortoise over water, the Dragon over air, and a creature approximating to the Unicorn over the earth: and it is not to be wondered at that the Western world should from time to time have reflected the ideas which slowly filtered westward, particularly in associations where questions of magic, religion and fables were concerned. How far Roman and mediæval science were affected in regard to the four creatures already mentioned may be briefly noted.

The Tortoise never won the great reputation in Europe that it secured in China. It was chiefly commended for its slowness and sureness, in that respect courting an invidious comparison with the scatter-brained hare. However, Pliny did claim great powers for the tortoise as contributing remedies against poisons; and a kind of turtle soup was recommended as a sovereign cure for the king's evil.

The Unicorn, on the other hand, won the highest measure of merit and rose to become, from the thirteenth century onwards, an emblem representing the noblest virtues of strength, purity, beauty and complete perfection of animal form—even symbolising Christ. Then it became secularised as a State emblem. Two unicorns were the supporters of the Crown in the Arms of Scotland until the Union with England, when James I took one of them and opposed it to the lion of England. That the unicorn and lion were natural enemies, (ancient lore is full of such antipathies), is borne out in that convenient vehicle of esoteric meanings, the nursery rhyme:

"The lion and the unicorn,
Were fighting for the crown,
The lion chased the unicorn,
All round the town."

The lion (or leopard) has always nobly supported the Crown of England, but from time to time in conjunction with different allies. It was seen in company with the antelope (a near relation of the unicorn) under Henry VI; with the bull under Edward IV; with the dragon, which had figured on the helm of King Arthur, under Henry VII and VIII; and with the greyhound under Mary and Elizabeth.

What then was the origin of the unicorn? Oddly enough, for such a courtly and graceful beast its extraction was of the humblest and clumsiest. The rhinoceros with its single horn or snout may be taken as the ancestor-in-chief, although Pliny mentions other unicorns, such as an Indian ox, an Indian ass and the monoceros, which professed to have a body resembling a horse, a head like a stag, feet like an elephant and the tail of a boar. It had, too, a single black horn in the middle of its forehead, two cubits in length; and it lowed in a horrible manner.

It is obvious that some original in real life had been observed by travellers in that far distant and vague region which was so often designated as "India" or "Ethiopia"—undefined parts of the world which covered a multitude of wonders. As travellers' tales passed from mouth to mouth they naturally became more and more involved and technical and further from the truth. Pliny quotes as one of his chief authorities, Ctesias, a writer of the fourth century, B.C., and it is from his account that the rhinoceros is credited in the *Natural History* with a cloven hoof, the mane and back of a horse (also a habit of neighing) and the twisted tail of a wild boar—diverging in very few details from the monoceros. Evidently Pliny felt it best, considering the uncertainty surrounding this particular type of animal, to include every possible variety of the species. As to the benefits derived from the rhinoceros, its horn was highly valued as an antidote to poisons. For anyone drinking

out of the cups made from it absolute safety was guaranteed, although the proof was not always forthcoming.

By the sixth century A.D. the legend of the unicorn was beginning to take other shapes, somewhat of an allegorical nature. A story was told of the only manner in which this "right cruel beast"—as it was described—with a horn four-foot long in the middle of its forehead, so sharp and strong that its attack was irresistible—could be captured. A virgin must be used as a decoy: "She openeth her lap and the Unicorn layeth thereon his head, and leaveth all his fieriness and sleepeth in that wise." The explanation of this unusual sensibility was that the characters of the rhinoceros and the antelope had in some way been combined to supply a softer and more kindly disposition. Isidore of Seville, one of the most famous contributors to the bestiaries in the seventh century, tells the tale and describes a truly graceful unicorn, capable of being tamed and taken to the King's palace after having fallen a victim to these feminine influences.

Coupled with this story is another, which speaks of the unicorn as the most aristocratic of all animals, leading the way to a pool of poisoned water and dipping his magic horn to make it safe for the rest of the herd to drink. We have seen that the rhinoceros had already been reputed to supply from its horn (the seat of power, according to the ancients and frequently used in that sense in the Bible) an antidote for poison, so that the same tradition is carried through the centuries, to the days when the alicorn (or unicorn's horn) was used to test food and drink during the terrible and embarrassing period of diplomatic poisoning in Europe associated with the Borgias. The tusk of the Narwhal, which most nearly represents the principle of the single horn in nature, became henceforth an important article of commerce and fetched enormous prices from those who felt that their lives might easily depend on its magical intervention.

As to the Phœnix, Pliny tells us that of all the birds of India and Ethiopia—the lands of mystery—magnificent as they might be, the "Arabian bird" eclipsed them all. Shake-

speare applies the legend very charmingly to the Princess Elizabeth and likens her to "the maiden phœnix" from whose ashes should rise an heir,

> "When heaven shall call her from this cloud of darkness,
> Who from the sacred ashes of her honour
> Shall star-like rise, as great in fame as she was,
> And so stand fixt."

But it appears that Shakespeare had in his allusion misconstrued the sex of the phœnix—at any rate as understood by Pliny:

"However, I cannot tell what to make of him, whether it is a tale or no that there is only one of them in the whole world, and the same not commonly seen. By report he is as big as an Eagle; for colour, as yellow and bright as gold; the rest of his body (namely, all about the neck) a deep purple; the tail azure blue, intermingled with feathers of a rose carnation colour; and the head bravely adorned with a crest and pennache finely wrought, having a tuft and plume right fair and goodly to be seen. Manilius, the noble Roman Senator, versed in the best kind of learning and literature, and yet never taught by any, was the first man of the long Robe who wrote of this bird at large and most exquisitely. He reports that no one was ever known to see him feeding; that in Arabis he is held a sacred bird, dedicated to the Sun; that he lives 660 years; and when he grows old and begins to decay, he builds himself a nest with the twigs and branches of the Canell, or Cinnamon, and Frankincense trees; and when he has filled it with all sort of sweet Aromatical spices he yields up his life thereupon. He says moreover, that from his bones and marrow there springs at first as it were a little worm, which afterwards proves to be a pretty bird. And the first thing that this young Phœnix does is to perform the obsequies of the former Phœnix late deceased, to translate and carry away his whole nest into the city of the Sun near Panchæa, and to bestow it full devoutly there upon the altar. Manilius also affirms that the revolution of the great year so much spoken of (when the Stars return again to their first points and give the same times and seasons as at the beginning) agrees exactly with the life of this bird. Cornelius Valerianus writes that when Q. Plautius and Sex. Papinius were Consuls, the Phœnix flew into Egypt. He was brought to Rome at the time that Claudius Cæsar was Censor

and exhibited in a full hall and general assembly of the people, as appears on the public records. However, no one ever doubted that he was a counterfeit Phœnix, and no better." [29]

Birds had so many strange powers attributed to them that Pliny has difficulty in taking all the accounts handed down quite seriously. The limits to his credulity are in fact remarkably well defined.

"I look upon the birds as fabulous which are called Pegasi, headed like horses, and the Griffons which are supposed to have long ears and a hooked bill. I take them to be mere fables that the Pegasi are in Ethiopia, and the Griffons in Scythia (guarding the gold in the mountains). Moreover, I think the same of the Tragopan ('goat Pan') which many men affirm to be greater than the Eagle, having crooked horns like a Ram on either side of the head, of the colour of iron and the head only red. Neither will I believe there are the birds Sirens, let Dino, the father of Clitarchus that renowned writer, say what he will. He asserts for a truth that they exist in India and that they charm folk asleep with their singing and then fly upon them and tear them in pieces.

"He that will credit these fables may as well believe that dragons forsooth taught Melampus by licking his ears how to understand the language of birds when they sing on trees, or cry and chirp in the air. Likewise the tales that Democritus tells, who named certain birds from whose blood mingled together and allowed to corrupt a serpent is produced, which if a man eats he will know what birds say to one another. Then there are the strange things he tells of the Lark above the rest. In truth, without these fabulous lies men's heads are occupied enough (and too much so) about the Auguries of birds without any need to busy their brains about these toys. Homer in the Odyssey speaks of a kind of bird called Scopes, but I cannot comprehend those Satyrical gesticulations of theirs when they are perched which so many men talk of. Nor can I think it is a bird that is of our knowledge nowadays. Therefore it is far better to write of those which we know." [30]

The story of how cinnamon was obtained attracts some interest because it has to do with a number of Eastern stories connected with large birds, the type of "roc" which conveyed Sinbad the Sailor through the air. This is what Pliny says:

"Fabulous antiquity, and the prince of liars, Herodotus, have reported, that in that tract where Bacchus was nourished, Cinnamon and Canell either fell from the nests of certain fowls, and principally of the Phœnix, through the weight of the venison and flesh which they had preyed upon and brought thither as they built in high rocks and trees; or else was driven and beaten down by arrows headed with lead." Also Canell or Cassia was got from certain marshes, "guarded and kept with a kind of cruel Bats, armed with terrible and dreadful talons, and with certain flying Pen-dragons." Pliny was not easily carried away with improbable tales and he says that he only thinks they were invented to put up the price of the products.

What Herodotus (whom Pliny so impolitely calls a liar) actually says is that the Arabians cut up dead oxen and asses into large pieces of meat which they placed near the nests. The great birds, which had built their nests of cinnamon sticks, then carried up the large pieces of meat, and these proved to be of such a weight that they broke down the nests and fell, bringing down the cinnamon with them.

Dragons never gained quite the same vogue in Europe that they did in the East. The Asiatics regarded them as symbolical of evil: in the West they were treated as in many ways beneficent. They did not fly in the air, for instance, but were ordinary land and sea serpents.[1] Again it was in India, where owing to the goodness and fatness of the ground, the temperate air and the abundance of water, everything grew to immense sizes, that serpents loomed especially large. In Ethiopia they reached twenty cubits in length and sometimes were plumed and could cross the seas wrapped together like a hurdle or lattice work, cutting the waves and bearing their heads aloft to serve as sails in order "to find better pasturage in Arabia". The boa-constrictor's habits are known to be exceedingly

[1] Pliny, curiously enough, does not mention the mysterious "flying serpents" which Herodotus had written about. The reason for the great esteem in which the ibis was held in Egypt lay in the fact that these birds resisted the invasion of the swarms of flying serpents from Arabia in the spring at the point of a certain narrow gorge and completely destroyed them. Isaiah also mentions the flying serpents.

formidable; but the ancients were able to improve upon them.

"Megasthenes writes that there are serpents among the Indians grown to such bigness that they can swallow stags or bulls whole. Metrodorus says that near the river Rhyndacus in Pontus there are serpents that catch and devour birds however strongly and high they fly. It is well known that Attilius Regulus, General under the Romans, during the wars against the Carthaginians assailed a Serpent near the river Bagrada, which was 120 feet long. Before he could conquer him he was driven to discharge on him arrows, quarrels, stones, bullets and such-like shot out of brakes, slings and other engines of artillery as if he had given the assault to some strong fortress. And the proof of this was to be seen by the marks remaining in his skin and jaws which were placed in a temple of Rome. And this is all the more credible since we see in Italy other serpents called Boa, so big and huge that one of them, killed in the Vatican, was found to have an infant all whole in his belly. This serpent lives at first on cow's milk and therefore takes the name of Boa." [31]

A snake that acquired an unsurpassed reputation for evil was the basilisk; small but exceedingly venomous. In *Cymbeline* Posthumus speaks of his ring—

> "It is a basilisk unto mine eye
> Kills me to look on't."

And Pliny bears witness to its malignant power, that it had only to hiss once for any other serpent to beat a hasty retreat. Its habit was not to crawl along the ground; but it "goes upright and aloft", scorching grass and herbs in its progress. The story was told that once on a time when a basilisk was killed by a horseman, the poison was so strong that it travelled up the lance and destroyed both man and horse. Yet for this deadly serpent Nature had kindly provided an antidote in the mongoose, which Pliny describes as a weasel. The smell of the mongoose had an overwhelming power over the snake. Both died when the "weasel" was cast in the holes where the basilisk lay. The quarrels between the elephant and the dragon ended in the same fatal manner, because the dragon tied the

elephant fast in a knot and the elephant in falling crushed to death the dragon wreathed about him.

The wolf was in many ways the most sinister of the animals. The magical transformation of a man into a wolf was a belief which has given the ugly turn to the epithet "turncoat".

"It is commonly thought in Italy that the eyesight of wolves is hurtful and that if they see a man before the man spies them they cause him to lose his voice for the time being. Those that are bred in Africa and Egypt are small and without spirit. In the colder clime they are more eager and cruel. That men can be transformed into wolves and restored again to their former shape, we must confidently believe to be a loud lie, unless we give credit to all those tales which we have for so many ages found to be mere fabulous untruths. But as this opinion has become so firmly fixed as to have caused the term Versipellis (turn-coats, or changing the skin) to be the most opprobrious word of defiance or imprecation, I think it not amiss to point out its origin. Euanthes says that he found among the records of the Arcadians that there was a family of the Antaei out of which one member must of necessity be transformed into a wolf; and when the family has cast lots who it shall be, they accompany the party on whom the lot has fallen to a certain lake in that country. There they turn him naked out of all his clothes, which they hang on an oak near by. He swims over to the other side and having entered the wilderness is presently transfigured and turned into a wolf and keeps company with his like for nine years. If he forbears all the while to eat man's flesh he returns again to his former shape of a man again, save only that he will look nine years older than before. Fabius adds that he takes again the same apparel that was hung up on the oak. It is a wonder to see the pass to which these Greeks are come in their credulity. There is no lie so shameless but it finds someone to uphold and maintain it.[1]

"So, too, Agriopas tells a tale of one Demaenetus that at a certain solemn sacrifice (which the Arcadians celebrated in honour of Jupiter Lycæus) he tasted the inwards of a child that was killed

[1] The story of the werewolf probably first came from Herodotus and is repeated in the *loup-garou* of France. According to Herodotus every Neurian once a year became a wolf for a few days, at the end of which time he became his normal self. "Not that I believe this," he adds, "but they constantly affirm it to be true, and are even ready to back their assertion with an oath."

for a sacrifice according to the manner of the Arcadians (who used even to shed man's blood in their divine service) and so was turned into a wolf. Ten years afterwards he became a man again, was present at the public games, wrestled, did his devoir, and returned home victorious from Olympia." [32]

Several stories have to do with gold which seems to have had attractions for other creatures beside men. In an age when there must have been large quantities of buried treasure it is conceivable that some of the stories were purposely manufactured to scare off intending thieves. The griffins were the recognised custodians of gold in the mountains;[1] but the most extraordinary story of all concerns the Ant-lion, originally mentioned by Herodotus as being of the size of a fox, which was the progeny of a lion on the father's side and an ant on the mother's; for ants evidently could grow to a surprising size in ancient days and in foreign parts. This fearsome beast had the fore part of a lion and the hind part of an ant and suffered in consequence from not being able to eat meat like his father, nor herbs like his mother. Pliny tells a tale, very difficult to explain, of the capabilities of these strange creatures:

"In the temple of Hercules at Erythræ there were to be seen the horns of a certain Indian Ant which were set up there for a wonder to posterity. In the country of the Northern Indians named Dardae the Ants cast up gold above the ground from the holes and mines within the earth; they are like cats in colour and as big as the wolves of Egypt. This gold which they work up in the winter time, the Indians steal from them in the extreme heat of summer, waiting their opportunity when the ants lie close within their caves under the ground, protected from the parching sun. Yet not without danger, for if the ants happen to wind them and catch their scent, out they go and follow after them in great haste, and fly upon them with such fury that often they tear them in pieces. Let them make

[1] For a fuller description of Griffins we may refer to Mandeville. The upper part of the body was that of an eagle; the lower the shape of a lion. But it was stronger than eight lions and, taking each part separately, stronger than a hundred eagles. It was thus able to carry a great horse, or two oxen, at a time to its nest. Its talons were like the horns of oxen and out of them were made drinking cups; and from its ribs and "the pens of its wings" were made bows of great strength and reliability.

way as fast as they can on their swiftest Camels, they are not able to save themselves, so fleet of pace, so fierce of courage are they to recover the gold that they love so well."[2] [33]

We now come to mermaids and the less attractive mermen. The philosopher Anaximander in the fifth century B.C. had in his theory of creation advanced the theory of a primordial slime from which all living creatures sprang. He even believed that man at first resembled a fish—an evolutionary theory of great originality. Whether Charles Lamb's description of certain acquaintances of his as "odd fishes" is a survival of this old idea may be uncertain; but one conclusion is quite certain that it caused comparatively little surprise in the old days when mermaids and mermen were encountered on the rocks.

"In the time of Tiberius an Ambassador came expressly from Ulysipon to say that on their sea coast was discovered in a cavern a sea goblin, called Triton, sounding a shell like a Trumpet or Cornet; and that he was in form and shape like those that are commonly painted for Tritons. As for the Mermaids, it is no fabulous tale about them, for they are just as the painters draw them; only their body is rough and scaled all over. Such a Mermaid was plainly seen on the same coast near the shore and the inhabitants dwelling near heard it afar off, when it was a-dying, making a piteous moan, crying and chattering very heavily. Moreover, a lieutenant or governor under Augustus Cæsar in Gaul wrote that many Mermaids were seen cast up upon the sands and lying dead. I am able to cite divers Knights of Rome, right worshipful persons and of good credit, who testify that on the coast of the Spanish Ocean near Gades, they have seen a Merman, in every respect resembling a man; and they report that in the night he would come out of the sea aboard their ships; but on whichever side he settled he weighed it down, and if he rested and continued there any length of time he would clean sink it." [34]

[2] Herodotus gives a full description of this gold hunting. The "great sand ants" which are smaller than dogs but bigger than foxes "make their dwellings underground, and like the Greek ants, which they very much resemble in shape, throw up sand-heaps as they burrow. Now the sand which they throw up is full of gold". This the Indians collect during the hottest part of the day when the ants hide themselves to escape the heat. When they get away on their camels the ants, scenting them, start in pursuit. This is the original story which was enlarged on later. The only plausible conjecture is that it started with an account of the Pengolin, or Ant-eater, which is found in Northern India.

CHAPTER VI

Of Birds

THE religious instinct has had the effect of making mankind look instinctively upwards to the sky for inspiration, and the Romans were no exception in being attracted to the wide scope of the air in which the birds have their habitation. Jupiter was the god of the sky; his "squire", or armour-bearer, was the eagle, chosen for its native strength and ferocity. As a matter of privilege in holding this office the king of birds was made impervious to lightning.

Nor was it merely an accident that the birds more than any other living creatures seemed to embody in their persons the different virtues and vices. On the virtuous side, the eagle represented might and majesty; turtle doves domestic faithfulness and happiness; the ostrich speed; the goose gravity and wisdom; the nightingale the supreme art of music; the phœnix the soul's immortality. As representatives of the vices, the cuckoo stood for presumption and intolerance; the peacock for vanity; screech-owls, crows and ravens for misfortune; parrots for excessive loquacity. Finally, the kingfisher foretold fine weather; and poultry constituted the chief medium of the fortune teller.

Turning to the scientific aspect of birds, a point to be noticed is that eagles and hawks were not too easily distinguished. Classification and names were used in ancient days according to the roughest and readiest methods. Not until Linnæus revived the whole problem afresh was any workable and co-ordinated system ever arrived at. Aristotle attempted an ingenious method of dividing birds according to their diet—into the classes which fed on flesh, seed, insect, fish or

green stuff. Pliny seems to have observed no order of any kind. He brackets such birds as the goose, bustard, heathcock, the cranes that waged war on the Pygmies, storks and swans, flamingoes and the guinea fowl, popinjays or parrots, blackbirds (a white variety was to be found only in Arcadia) and a number of other birds quite impossible to identify.

Six kinds of eagles are mentioned, of which the cleverest was called Perenos by Homer. This bird lived among the lakes and meres and was famous for carrying tortoises aloft and then dropping them to break their shells. The poet Æschylus met his death from this dangerous habit. He had been told by the wizards that he would die on a certain day by something falling on his head. He therefore went out into a great open plain, thinking to avoid the danger. But an eagle unexpectedly let a tortoise fall over the spot where he was standing and "dashed out his brains and laid him asleep for ever"—the effect, it might almost be said, of two stones with one bird.

A certain kind of "eagle", probably the osprey, was more Spartan than the rest in her methods of education:

"She is the only one that will beat and strike her little ones with her wings before they are feathered and by doing so force them to look full against the Sun's beams. If she sees any one of them to wink, or their eyes to water at the rays of the Sun, she turns it head foremost out of the nest, as a bastard and not right, nor none of hers. But she brings up and cherishes the one whose eye will abide the light of the Sun as she looks directly upon him." [35]

Such a severe standard of discipline marked out the eagle as a worthy leader of the Roman legions in battle. At first the honours were divided between ensigns representing eagles, wolves, minotaurs, horses and boars; but gradually the King of Birds reigned supreme and the rest of the ensigns were left behind in the camp. It thus came about that the silver eagle crowned the standard of each legion. Since that date the eagle has presided over the fortunes of France, Germany, Austria, Russia and, as another traditional rival of the British lion, America.

Just as dogs were used on earth for hunting, so were hawks used in the sky. Falconry was a favourite sport in Thrace.

"Near Amphipolis men and hawks join in fellowship and catch birds together. The men drive the woods, beat the bushes and reeds to spring the fowl; then the hawks flying overhead, seize upon them, and either strike or bear them to the ground. The hawkers and fowlers for their part, when they have caught the fowl, divide the booty with the hawks. It is said that they let these birds fly at liberty again and then the hawks are ready to catch for themselves. Moreover, when it comes to hawking, they will signify to the falconers by their number of cry and flying together that there is good game abroad and so draw them out to take the opportunity." [36]

As opposed to the ferocity of the eagle the picture of the turtle-doves represented a state of domestic happiness; the mated pair were ever true to one another, although the cock bird was apt at times to be tyrannical.

"The females are very meek and patient: they will endure and abide their imperious males, notwithstanding that sometimes they are very churlish unto them, offering them wrong and hard measure. They are jealous of the hens and suspicious (although without any cause and occasion given, for they are passing chaste and continent by nature) and then you will hear the cocks grumble in the throat, and all to rate the hens; you will see them peck and job at them cruelly with their beaks, and yet soon after, by way of satisfaction and to make amends again for their curt usage, they will fall to billing and kissing them lovingly. They will make court to them and woo them kindly, they will turn round about many times together by way of flattery and as it were by prayers seek unto them for their love. The male as well as the female are careful of their young pigeons and love them alike. You will see the cock often rebuke, nay chastise the hen, if she keep not the nest well; or having been abroad, for not coming home sooner to her young. And yet they are kind to them when they are about to build, lay and sit. One can see how ready they are to help, to comfort and minister to them in this case. As soon as the eggs are hatched, you will see them at the very first spit in the mouths of the young Pigeons salt brackish earth which they have gathered in their

throat in order to prepare their appetite to meat and to season their stomacks against the time they should eat. Doves and Turtles have this property in their drinking, not to hold up their bills between whiles and draw their necks back, but to take a large draught at once, as horses and kine do." [37]

Ostriches were accounted the largest of the birds and the most similar to four-footed beasts, since they were taller than a man and swifter than a horse. Pliny says they had cloven hoofs like red deer and that they fought with them, picking up stones as they ran away and throwing them at their pursuers. It did not escape his notice that the ostrich "can concoct and digest [digestion was regarded as a kind of cooking] anything whatsoever without difference or choice; yet they are so foolish that they think, in spite of their height, that they are safe from observation if they thrust their head and neck in a shrub or bush". Ostrich plumes (pennaches) were used to adorn the helmets of soldiers in the wars.

The goose has suffered a decline in the world's estimation. The Romans were eternally grateful to the bird for having saved the Capitol from capture when the dogs should by right have first given the alarm. For this reason the Censors by virtue of their office had to see as their first duty that the sacred geese were well fed and cared for. Contrary to most modern ideas the bird was regarded as the embodiment of learning and wisdom.[1] It was sometimes treated as a household pet. Lacydes, the philosopher, had a tame goose which never left him night or day, neither in the open street nor in the house, and followed him even to the private baths when he went to bathe.

Paté de fois gras and giblets were reckoned great delicacies.

"Our countrymen and citizens of Rome (Believe me) know forsooth how to make a dainty dish of their liver. In those Geese that are kept up and crammed fat in coop the liver grows to be exceeding great, and when it is taken forth of the belly it waxes bigger still if it is steeped in milk and sweet mead. Therefore there

[1] Compare the Greek owl which for two centuries accompanied the figure of Athena on the coinage.

is good reason to enquire about the first inventor of this good and singular commodity to mankind, whether it was Scipio Metellus, lately called to be Consul, or M. Sestius who in those days was by birth a gentleman of Rome. But leaving that undecided, it is known for certain that Messalinus Cotta, son of the Orator, found out the secret to broil and fry the flat broad feet of Geese and with Cocks' combs to make a favourite dish of meat between two platters. I for my part will certainly give every man his due and will not defraud of their singular praise and honour those who have been benefactors to the kitchen and masters in cookery." [38]

In the same way that in England the geese used to march to London along the Great North Road and from other parts of the country, so flocks of them went all the way "barefoot" from Tourney in France as far as Rome. An ingenious device was to put the weary ones that lagged behind in the front, and "so the rest by a certain thick united squadron (which they make naturally when they go together) drive the others before them".

Beside their use for the table, geese provided feathers and soft down for bolsters and pillows. The gentle "fine smooth dames", and the men as well, could not sleep properly without pillows, and complained of a pain in their necks if they had not a soft support for their heads. The best quality came from Germany. Frequently on active service in that country, as Pliny evidently discovered for himself, companies of soldiers, instead of keeping guard, would break discipline and scour the country for geese, to secure the feathers and down. A pound of feathers would fetch as much as five deniers.

Another honour and distinction conferred on the saviours of the Capitol was that the sign of the Golden Goose was flown at the masthead of the great corn freighters which carried cargo between Africa and Egypt and Rome. The emblem was painted all over the furniture of the ship, and this happy association with successful commerce seems to account for the tradition of the goose that laid the golden eggs.

The art of music was represented by the nightingale—*vox et praeterea nihil.* This bird was so great a master of singing,

that it taught its young ones note by note (a story impaired by the ascertained fact that the parents have invariably ceased singing by the time the young ones are old enough to learn). Instances of this belief still occur in country districts. A good song bird at Rome would fetch the price of a good page, or harness-bearer. Pliny knew of a rare white nightingale which Claudius Cæsar purchased for 6,000 sesterces as a present to the Empress Agrippina.

Men could imitate the song of the nightingale "by a device of putting water in a reed or cane held across the mouth and by putting their tongue in a hole made on purpose for it and blowing". The trick was so perfectly executed that it was impossible to detect the difference; possibly more effectively than with the modern toy.

Here is a charming passage in praise of the nightingale, which recalls the proficiency of the Elizabethans in all forms of vocal music.

"Is it not a wonder that so loud and clear a voice should come from so little a body? Is it not as strange that she should hold her wind so long and continue with it as she does? Moreover, she alone in her songs keeps time and measure truly: she rises and falls in her note, just with the rules of music and perfect harmony. For one while, in one entire breath, she sustains her tune at length; another while she quavers and goes away as fast in her roulades; sometimes she makes stops and short cuts in her notes; another time she gathers in her wind and sings descant between the plain song. She fetches her breath again, and then you will have her in her catches and divisions. Anon all of a sudden, before a man could think it, she drowns her voice so that one can scarcely hear her. Now and then she seems to record to herself, and then she breaks out to sing voluntary. In sum, she varies and alters her voice to all keys; one while, full of her largs, longs, and briefs, semibriefs and minims; another while in her crochets, quavers, semiquavers, and double semiquavers. For at one time you will hear her voice full and loud, another time as low; and anon shrill and on high: thick and short when she wishes, drawn out at leisure again when she is disposed; and then (if she be so pleased) she rises and mounts up aloft, as it were with a wind-organ. Thus she alters from one

to another and sings all parts, the Treble, the Mean, and the Base. To conclude, there is not a pipe or instrument in the world, devised with all the Art and cunning of man, that can afford more music than this pretty bird out of that little throat of hers: so much so that no doubt it was an excellent presage of a nightingale that settled upon the mouth of Stesichorus the Poet and there sung full sweetly; who afterwards proved to be one of the most rare and admirable musicians that ever was." [39]

On the habits and characteristics of the Cuckoo, Aristotle and Pliny appear to have differed. Aristotle says distinctly that the cuckoo does not change into a hawk in the autumn and explains the error as arising from the fact that the hawk disappears just at the time when the cuckoo arrives and that it is seen again when the time comes for the cuckoo to depart —a statement true at any rate of the sparrow-hawk. The similarity of flight may also have added to the confusion. Pliny, however, adheres firmly to the hawk tradition, which is a belief by no means uncommon at the present day. Here is his account of the habits of a bird which has always excited so much interest and controversy.

"They always lie in other birds' nests, and most of all in the Stock-doves', usually one egg and no more (which is the case with no other bird) and seldom twain. The reason why they would have other birds sit on their eggs and hatch them is because they know how all birds hate them, for even the very little birds are ready to war with them. For fear therefore that the whole race of them should be utterly destroyed by the fury of others of the same kind, they make no nest of their own (being otherwise timorous and naturally fearful of themselves) and so are forced by this crafty shift to avoid the danger. The Titling therefore that sits, being thus deceived, hatches the egg and brings up the chick of another bird. And this young Cuckoo being greedy by nature, beguiling the other young birds and intercepting their meat, grows fat and fair-liking and so comes into special grace and favour with the mother of the rest. She rejoices to see so goodly a bird toward and wonders at herself for having hatched and reared so trim a chick. The rest, which are her own indeed, she sets no store by, as if they were changlings. In regard of that one she counts them all

bastards and misbegotten; yea, and suffers them to be eaten and devoured of the other even before her face. This she does until the young cuckoo being fledged and ready to fly, is so bold as to seize upon the old Titling and to eat her up that hatched her. For goodness and sweetness of meat there is not another bird comparable to the young Cuckoo." [40]

Pliny is correct in saying that the young cuckoo does manage to get rid of its young companions—a task it performs by working its back under an unfortunate neighbour and then tipping it over the side. This continues until the cuckoo remains in sole possession of the nest. The dastardly charge of murdering the old titling fortunately is not substantiated.

The peacock bore a reputation not only for pride and vainglory, but also for maliciousness, in that way contrasting unfavourably with the goose which was invariably bashful and modest. The peacock would spread its tail, showing and setting out his colours to the utmost so that they shone like precious stones. But when it lost its tail (moulting every year when the trees shed their leaves) then "he has no delight to come abroad until such time as trees blossom again". As a dish for the table Hortensius, the orator, was the first to exploit the peacock, at the solemn feast when he was consecrated High Priest: the feathers, it may be noted, still figure on great ceremonial occasions at Rome. In the time of the Empire peacocks were regularly fattened for the market.

The birds of ill omen were the crow, the raven and the screech-owl. Opinion was not unanimous about the crow, because by some authorities it was considered to be on the whole a good-omened bird. The screech-owl, however, always betokened heavy news. It flew at night time about desert places and was, in short, the very monster of the night, never crying out clearly but uttering a heavy groan of doleful moaning. Another unfortunate characteristic was the sidelong manner of its flight, as it drifted along, carried away, as it seemed, by the current of the wind. Certainly an uncanny bird.

The cry of the ravens was an adverse omen, "when they seemed to swallow in their voice as though they were choked". Macbeth accepted the sign as foreboding death—

> "The raven himself is hoarse
> That croaks the fatal entrance of Duncan
> Under my battlements."

A more cheerful side appears, however, in the queer humour that has from time to time been associated with the raven. "Grip" in *Barnaby Rudge* was exuberantly proud of his brimstone birth and questionable parentage; but a distinguished ancestor, which could boast of a State funeral, would no doubt have excited his fiercest jealousy.

"In the days of Tiberius a young Raven was hatched in a nest upon the church of Castor and Pollux, and in making a trial flight alighted in a shoemaker's shop just opposite the said church. The master of the shop was well enough content to receive this bird, as commended to him from so sacred a place, and therefore set great store by it. This Raven in a short time became acquainted with man's speech and every morning would fly up to the top of the Rostra, or public pulpit for Orations, and there, turning to the open Forum, he would salute and bid good-morrow to Tiberius Cæsar, and after him to Germanicus and Drusus, the young princes, each by their names. Then he greeted the people of Rome also that passed by. When he had done so, he would again fly to the shoemaker's shop. This duty he practised for many years together, to the great wonder and admiration of all men. Now it fell out that another shoemaker, who had taken the next corviner's shop, either from a malicious envy or some sudden anger at the Raven chancing to set some spot upon a pair of his shoes, killed the said Raven. At this the people took such indignation that they rose in an uproar, and drove him out of that. Not long after they murdered him for it. The carcass of the dead Raven was solemnly interred and the funeral performed with all the ceremonial obsequies that could be devised; for the corpse of this bird was bestowed in a coffin, couch or bed, bedecked with chaplets of fresh flowers of all sorts, carried on the shoulders of two black Moors with minstrels before sounding the hautboys and playing on the fife, as far as the funeral fire which was piled on the right-hand side of the Appian

Way, two miles outside the city, in an open field called Rediculi. The people of Rome reputed so highly the ready wit and apt disposition in a bird that they thought it sufficient cause to ordain a sumptuous burial for it; yea, and to revenge its death by murdering a citizen in that city in which many a brave man died without anyone solemnising their funerals: in that city, I say, which found no man to revenge the unworthy death of the renowned Scipio Æmilianus after he had won both Carthage and Numantia." [41]

Ravens were not the only artists of conversation among birds. Parrots brought from India, with green bodies and vermilion necks, would salute emperors and bid them good morning. Parrots loved wine, and after drinking freely would be very pleasant, playful and wanton. The method of training these birds to talk was somewhat drastic. "She has a head as hard as her beak. When she learns to speak she must be beaten about the head with a rod of iron; otherwise she cares for no blows. When she takes her flight from any place "she lights upon her bill and by resting on it makes her weight lighter for her feet which are naturally weak and feeble"—a very realistic and ingenious piece of observation.[1]

The magpie was also a good linguist, taking great delight and pleasure in learning new phrases, although apt to be forgetful. These birds were known to have died from grief at having failed to pronounce some of the harder words.

"The Empress Agrippina had a Blackbird or a thrush which could imitate man's speech; a thing never seen or known before. At the moment I am writing this the two young Cæsars (the princes Germanicus and Drusus) have one Stare (starling) and some Nightingales, taught to speak Greek and Latin. They will study upon their lessons and meditate all day long, and from day to day come out with new words and be able to continue a long speech and discourse. To teach them properly these birds must be in a secret place by themselves where they can hear no other voice; and one must sit over them and repeat often what he would have

[1] According to Mandeville, in the East "popinjays" or "psittakes" were very fluent talkers (those at least with large tongues and five toes on their feet) for they would "salute men that go through the deserts and speak to them as apertly (openly) as though it were a man". The kind with only three toes could not talk at all but only utter a cry.

them learn, yea, and please them also by giving them such food as they best love." [42]

Aristotle and Pliny solved many problems of bird life and noted the fact that both birds and fishes were peculiarly sensitive to temperatures, especially when searching for the most suitable breeding grounds; in this way their regular migrations were accurately accounted for. It was a pardonable error to believe that many birds hibernated like bats and snakes, and lost their feathers while doing so, appearing as a consequence in the spring in a sadly bedraggled condition. This belief was common in England as late as the time at which Philemon Holland was translating. Richard Carew in his *Survey of Cornwall* (1602) speaks of swallows being found in deep tin works and holes in the cliffs and quotes an authority who said he found them under the ice in northern parts, frozen. When brought near a stove and warmed, they recovered.

A quotation about Cranes, Storks and Swans contains an account of those curious people, the Pygmies.

"The nation of the pretty Pigmies enjoys a truce and cessation from arms every year when the Cranes, who wage war with them, come into our countries. Indeed, if a man consider how far it is from here to the Levant sea it is a mighty great journey that they take and their flight exceedingly long. They do not set forth without first calling a council and a general consent. They fly high because they have a better prospect to see before them. For this purpose they choose a captain to conduct them whom the rest follow. Certain are posted in the rear to signal by cries for them to keep their ranks close together in array; and this they do by turns. They maintain a set watch all the night long and have their sentinels who stand on one foot and hold a little stone with the other which, if they should chance to sleep, would drop from it and awaken them, reproving them for their negligence. While these watch, all the rest sleep, couching their heads under their wings, standing first on one leg and then on the other. The Captain with head erect signals to the rest what is to be done. These Cranes if they are made tame and gentle, are very playful and wanton birds and they will one by one dance (as it were) in a circle with their long shanks stalking full awkwardly. It is well known that

when they intend to take a flight over the Euxine they will fly direct to the narrow straits between the two capes Criu-Metophon and Carambis, and then they ballast themselves with stones in their feet and sand in their throats so that they fly more steady and endure the wind. When they are half-way over they fling down the stones and as soon as they come to the continent they disgorge the sand from their throats.

"Up to the present time it is not known whence the Storks come or whither they go. No doubt they visit us from far countries in the same way as the Cranes do; only the difference is that the Cranes are our guests in Winter and the Storks in Summer. When they intend to depart from our coasts they assemble in one place and not one is left out, unless it be some that are not at liberty but captive and in bondage. Then they all rise in one entire company and away they fly. And although it might be well known that they were on the move, yet no one (watch he ever so well) has ever seen them in their flight; nor do we at any time see them coming to us before we know that they have already come. The reason is that they do the one and the other always by night. There is a place in the open plains and champion country of Asia, called Pithonos-Come; where (by report) they assemble all together, and being met, keep a jangling one with another. In the end, if any lag behind and come tardy, they tear him to pieces and then depart.

"Wild Geese and Swans are passengers from country to country after the same manner; but then they are observed when they fly. They make way forcibly in a pointed squadron, as it were the stem of a foist (galley) at sea, armed with a sharp beak head (for by this means they cut the air better than if they drove it in front with a straight, even a square front). And thus wedge-wise little by little they spread broader and broader behind, and so gather more wind to heave them up and set them forward. In this flight of theirs they rest their necks on those that go before and as soon as any leading the way is weary with bearing his head he retires behind to ease himself upon the bird flying just in front. Storks keep one nest from year to year and never change, and they are of such a kind disposition that the young will keep and feed their parents when they are old, as they themselves were nourished by them in the beginning.

"Some say that the Swans sing lamentably just before their death; but untruly, I suppose, for my experience with several has showed the contrary." [43]

It is surprising to find swallows, instead of pigeons, carrying messages for their owners.

"Cæcina of Volaterrae, a gentleman of Rome, and a racehorse owner, used to bring with him to the city a number of these Swallows which he had got from his friends' houses where they were bred. And when his horses won the race he would take the birds and paint them with that colour which betokened victory and so with that livery (as it were) let them fly to his friends to carry tidings to them of the good success which he had obtained, knowing right well that every one would home to the same nest from whence they came. Fabius Pictor also relates in his Annals that when a fort (which the Roman garrison held) was besieged by the Ligurians, there was a she-Swallow, newly taken from her young ones, brought to him with this watchword that by a linen thread tied to her foot instead of a letter he should let them know, by so many knots tied in the said thread, on what day aid would arrive to the end that they also might be ready upon that day to sally forth." [44]

Pliny bestows the highest praise on the Game Cock and the Dunghill Cock as the bravest of all birds and also as the most indispensable for the conduct of affairs, because no action of importance could be taken in hand without consulting the auguries.

"Next after Peacocks the birds about our house, which are sentinels by night and whom Nature has created to break men of their sleep, to awaken and call them up to their work, have also a sense and understanding of glory. They love (I say) to be praised and are proud in their kind. Moreover, they are Astronomers and know the course of the stars. They divide the day by their crowing, every three hours. When the Sun goes to rest, they go to roost and like sentinels they will not suffer the sun to rise and steal upon us without giving us warning beforehand. By their crowings they tell us that the day is coming and prelude their crowing by clapping their sides with their wings.

"They are commanders and rulers of their own kind, be they Hens or Cocks. Their sovereignty is got by plain fighting, as if they knew that they had spurs (as weapons) given them about their heels to try the quarrel. Many times the combat is so sharp and

hot that they kill one another ere they give over. If one of them happens to be conqueror, he crows immediately upon victory and himself sounds the triumph. He that is beaten makes no words nor crows at all, but hides his head in silence. Yet it goes against his stomach to yield the gauntlet and give the bucklers. The common sort of the dunghill are just as proud as these game cocks; they march stately, carrying their neck bolt upright, with a comb on their head like the crest of a soldier's helmet. And there is not a bird that so often looks aloft to the sun and the sky; and then up goes the tail withal, which he bears on high turning backward like a sickle. And so it is that, marching thus proudly as they do, the very Lions (which of all wild beasts are the most courageous) stand in fear and awe of them and will not abide the sight of them.

"Some of these Cocks are made for nothing else but war and fighting and are never well except in quarrels, brawls and frays; and the countries that breed them grow to great renown, such as, in the highest degree, Rhodes and Tanagra. The next rank belongs to those of Melos and Chalcis. The purple robe at Rome and all magistrates of State do not disdain to give honour to these birds for their worth and dignity. It is from their hearty feeding, observed by the pullitiers, that good fortune is denoted. They rule our great rulers every day. There is not a mighty Lord of Rome that dares open or shut the door of his house before he knows the good pleasure of these fowls. What is more, the sovereign magistrate in his majesty of the Roman Empire, with the regal ensigns of rods and axes carried before him, neither sets forth nor comes back without direction from these birds. They give orders to whole armies to go forth to battle: they again command them to stay within the camp. It was they who gave the signal and foretold the issue of all those famous fought fields by which we have achieved all our victories throughout the whole world. In a word, these birds command the great commanders of all nations upon the earth, the small fibres and filaments of their insides being as acceptable to the gods in sacrifice as the greatest and fattest oxen."

[45]

Finally, a note about the cramming and cooking of poultry as practised in Italy and Greece, which suggests the Surrey Fowl.[1]

[1] Mention of the custom of cramming fowls reminds one of the mention of an

"The people of Delos were the first to cram Hens and Pullin. With them began the detestable gluttony of eating Hens and Capons fattened and larded with their own grease. An act made eleven years before the third Punic war expressly prohibited the serving at table of more than one Hen, and that a runner and not fed up and crammed fat. A method however was devised to escape the meaning thereof, by feeding Cocks and Capons with a paste soaked in milk and mead, to make their flesh more tender, delicate and of sweeter taste; because the letter of the statute extended only to Hens or Pullets. As for the Hens, only those are thought good and sufficiently crammed which are fat about the neck and have their skin plump and soft there. However our fine cooks then began to choose them by the appearance of the hind parts. And to make a better show in the platter they slit them along the chine and lay out their legs so as to take up the whole dresser board. The Parthians also have taught our cooks their fashions. And yet for all this fine dressing and setting out of dishes there is nothing that pleases and contents the tooth of man in every respect; for one likes nothing but the leg and another will only praise the white meat about the breast-bone. So it is that we have begun to keep fowls within narrow coops and cages as prisoners, creatures to whom Nature has allowed the wide air for their scope and habitation." [46]

early form of public incubators which occurs in Mandeville's *Travels*. In Cairo, it appears, "there is a common house that is full of small furnaces, and thither bring women of the town their eyren of hens, of geese, and of ducks for to be put into these furnaces. And they that keep that house cover them with heat of horse dung, without hen, goose or duck or any other fowl. And at the end of three weeks or of a month they come again and take their chickens and nourish them and bring them forth, so that all the country is full of them. And so men do there both winter and summer".

CHAPTER VII

Of Fishes

In any book dealing with ancient natural history one may expect to find a number of fish stories which as a class of anecdote are proverbially unreliable, even in modern times. Nor is one altogether disappointed in finding a few examples of evident exaggeration in the easy discursive method of Pliny. Why stories of fishes especially should be so liable to error is not altogether clear; but it would be a grave charge to impute to the early writers any wish to be deliberately untruthful. What Dr. Glover says of Herodotus applies equally to Pliny: "Any one who will read Herodotus till he knows him with real intimacy will find it hard to hear with patience the suggestion that he is other than the most candid and truthful of men."

The fact is that the ocean has always been noted for incredible things—as Shakespeare says, "th' imperious seas breed monsters"—and the further we go into the gloomy depths under present methods of research, the more alarming and incredible are the creatures that are revealed. *Magna indentis Naturæ varietas*, said Pliny, and this applied particularly to the deep waters, "ready to receive from the heavens above the genital seeds and causes of generation." In this belief that the great breeding ground of Nature was the ocean, Pliny accepted the teaching of Anaximander, who held that water was the great causal principle and that all living creatures owed their origin to a kind of primordial procreation in the mud. There is little difference between this theory and Haldane's conception of a primordial ocean of the consistency of dilute hot soup, which forms, according to his theory, a kind of border-

land, or starting-off place, between inanimate and living matter in the earliest stages of creation.

Just as the elephants held a pre-eminent position amongst the animals, so the whales (incorrectly classed among the fishes) were reputed the most impressive denizens of the ocean. One kind, to be found in the "French Ocean", was called a Physeter, or blower. It rose aloft out of the sea like a column or pillar, higher than the sails of a vessel. Then it spouted "a mighty deal of water, as it were, out of a conduit, enough to drown and sink a ship".

The fights between the Balaenae and the Orcae are graphically described; also a fight between an Orca and an armed land force of men. The Belaenae were seen off the Spanish coast, near Gades, the ancient Cadiz:

"At their set times they lie close in a certain calm deep and large creek in which they choose to cast their spawn and there delight above all places to breed. The Orcae, other monstrous fishes, know this full well and are deadly enemies. I can compare them with nothing but a mighty mass and lump of flesh, armed with most terrible sharp and cutting teeth. Well, these being aware that the Whales are there break into this secret creek, seek them out, and if they meet with either the young ones or the dams they cut and hack them with their trenchant teeth; yea, they run against them as it were a foist (galley) or ship of war armed with sharp brazen pikes in the beak-head. On the other hand, the Whales that cannot turn aside for defence, much less make head and resist, so unwieldy are they from their heavy body, have no other means of succour than to shoot into the deep and gain sea room to defend themselves from the enemy. On the other hand the Orcae do all in their power to lie in the way between them and home, and kill them in the straits or drive them on the shallows or else force them against the rocks and so bruise them. When these fights are witnessed, the sea seems as if angry with itself. There may be not a breath of wind, yet you will see waves where they encounter (with the blasts of their breath and the blows given by the assailant) greater than any tempestuous whirlwinds could raise.

"An Orca was discovered in the haven of Ostia where it was assailed by Claudius the Emperor. It chanced to come as he was constructing the harbour or pier, drawn thither by the sweetness

of certain beasts' hides that were brought out of Gaul and had been thrown overboard there. For several days she had fed on these and the weight of her body had made a channel (as it were) in the shallow water. By reason of the flowing of the sea she was so invested with the sands that she could not turn round. Still going after these hides on which she fed she was cast afloat on the shore by the billows of the sea, so that her back was to be seen above the water, very like the bottom or keel of a ship turned upside down. Then the Emperor ordered great nets and cords to be drawn along the mouth of the haven on each side behind the fish, while he himself with the Pretorian cohorts came against this monstrous fish, to show a pleasant sight to the people of Rome, and the soldiers out of many hoies and barks launched showers of darts and javelins. I myself saw one boat sunk by the abundance of water which this monstrous fish spouted; for the Whales have a mouth or great hole in their forehead and as they swim on the surface they send up on high (as it were) with a mighty strong breath a great quantity of water like storms of rain." [47]

What most attracted the attention of the ancients as a significant fact about the sea was the curious imitative quality of Nature, as seen in her various similitudes of things on land—such as grapes, saws, swords and vegetables. Marvell expressed the same idea when he spoke of

> "that ocean where each kind
> Does straight its own resemblance find."

The sea-" cowcumber" (as the cucumber always used to be pronounced in polite society) was a typical instance. Another good example was the lobster, the "Locust of the Sea", so called because in appearance it might be taken as an enlargement, or sea-modification, of the locust or grasshopper.

The same principle extended to sea-dogs (sharks) sea-elephants, sea-horses, sea-lions and sea-tigers. There were also sea-wolves (sturgeon), sea-thrushes (probably bream), sea-blackbirds, sea-nettles (the stinging jelly-fish), sea-rams which were very dangerous to swimmers, sea-sparrows (probably plaice) and many others. Nomenclature was a particularly difficult problem in olden time; nor was this surprising, con-

sidering that the only and obvious method of distinction between the varieties was to think of some good nickname. For a nickname is actually a resemblance-name. We, too, have our rabbit-fishes (a passable imitation), elephant-fish, cat- and wolf-fish and many others, names either inherited or wittily invented.

With Aristotle and Pliny fish were, on the whole, of a greater interest than land animals, since the Mediterranean was such a copious and convenient field for observation. Aristotle was born in a seaport on the Black Sea and managed to keep in touch with fishermen all his life. He therefore had a first-hand knowledge of the innumerable varieties of fish that abounded in these prolific waters. The truth of some of his observations (the generation and habits of the octopus is one conspicuous example) has been established only within recent years—an astonishing proof of the accuracy of some of his inferences. Charles Darwin, in acknowledging a translation of Aristotle, made the remark that "from quotations which I have seen, I had a high notion of Aristotle's merits, but I had not the most remote notion what a wonderful man he was. Linnæus and Cuvier have been my two gods, though in different ways, but they were mere schoolboys to old Aristotle." This was a compliment indeed. Pliny, too, had the profoundest respect for this great teacher, and describes him as "a man whom I cannot name but with great honour and reverence, and whom in the history and report of these matters I mean for the most part to follow".[1]

The main reason for the attraction of the sea naturally lay in the fact that it was such an exceptional place for marvels. The ancient quite as much as the modern world was inspired by the desire to discover the rare and unusual—anything of a record nature—in those watery places

[1] A reference to Aristotle's birthplace in Mandeville's *Travels* probably has some truth in it as a tradition. He says that Aristotle was born at Stagyra in Thrace and that "there is an altar upon his tomb. And there make men great feasts for him every year, as though he were a saint. And at his altar they holden their great councils and their assemblies, and they hope that through inspiration of God and of him they shall have the better council".

"Where He the huge sea-monsters wracks,
That lift the deep upon their backs."

Whales were sometimes reported to take up as much room as four acres of land. Pristes, a species of whale, were sometimes two hundred cubits long; eels in the Ganges thirty foot; tunnies went about in such multitudes that Alexander the Great on seeing them approach, like an army of enemies, had to bring his armada against them in close formation. Between Portugal and Andalusia there was a monstrous fish seen (suggesting a giant octopus) resembling a mighty great tree, spreading abroad such enormous arms that it was incapable of entering the straits of Gibraltar. Also, M. Scaurus, when Ædile at Rome, exhibited to the people the bones of the sea monster "before which lady Andromeda (it is said) was cast to be devoured". The bones were forty feet in length and the ribs deeper than an Indian elephant was high, and the ridge bone a foot and a half thick.

Then there were other curious inventions of Nature. The Tritons and Mermaids, as we have seen, were the denizens of the ocean that most nearly approached humanity; the Nautilus was Nature's sailing boat; the flying fish her birds; and the Dolphins her musicians and men's best playfellows.

Of the dolphin many delightful stories are told:

"He is a creature that has a loving affection not only for man but also for music. He is delighted with harmony in song, and especially with the sound of the water-instrument, or such kind of pipes. He is not afraid of a man, nor avoids him as a stranger. He comes to meet ships, plays and disports himself and fetches a thousand frisks and gambols before them. He will swim along by the mariners, as it were for a wager to see which should make way the speediest, and always passes them even if they sail with ever so good a fore-wind.

"In the days of Augustus Cæsar there was a Dolphin which entered the lake of Lucrinus and loved wondrous well a certain boy, a poor man's son. This boy went every day to school from Baiæ to Puteoli and was wont about noontime to stay at the water's edge and to call to the Dolphin 'Simo, Simo'. Many times he would give him fragments of bread which he brought on pur-

pose and by this means allured the Dolphin to come ordinarily to him at his call. (I would scruple to insert this tale in my story, but that M. Fabianus, F. Alfius, and many others have set it down for a truth in their Chronicles.) Well, in process of time at whatever hour of the day this boy lured for him and called 'Simo', out would come the Dolphin, were he ever so closely hidden in any blind corner, and swim amain to this lad; and taking bread and other victuals at his hand, would gently offer him his back to mount upon, and then down went the sharp pointed pricks of his fins which he would put up as it were within a sheath for fear of hurting the boy. Thus when he had him on his back, he would carry him over the broad arm of the sea as far as Puteoli to school, and in like manner convey him back again home. Thus he continued for many years together so long as the child lived. But when the boy was fallen sick and dead the Dolphin as usual came to the same place and, missing the lad, seemed to be heavy and mourn again until for very grief and sorrow he also was found dead upon the shore.

"There was another Dolphin not many years since upon the coast of Africa, near Hippo, which in like manner would feed from a man's hand, suffer himself to be gently handled, play with those that bathed in the sea and carry on his back whoever would get upon it. Now it happened that Flavianus the Proconsul in Africa perfumed and smeared this Dolphin with a sweet ointment. But the fish (as it would seem) smelling the new and strange smell, fell to be drowsy and sleepy and hulled to and fro with the waves as if it had been half-dead, and as though some injury had been offered to him, went his way and kept aloof and would not converse any more for months with men as before. However in the end he came again to Hippo, to the great wonder and astonishment of all that saw him. At last the vexations caused by having to entertain the great persons and lords who used to come to see this sight caused the men of Hippo to kill the poor Dolphin.[1]

[1] A fuller version of this story in the Younger Pliny's *Letters* is worth quoting—

"A friend was telling me of a town in one of our African colonies, named Hippo, close by the sea. Near it is a lagoon from which an estuary runs out to sea. The inhabitants love fishing, boating and swimming—particularly the boys. Their ambition is to swim out as far as possible. The boy who swims the farthest and fastest is acclaimed their champion.

"One of them, bolder than the rest, was swimming far out to sea, when a dolphin appeared which swam in circles around him and finally took him on his back. Then he let him go again, took him on his back once more and bore the trembling lad seawards. At last he turned towards the shore and restored him to dry land.

"The news spread through the town. The people flocked out and looked upon

"A similar story is told in the city of Iassos, for a Dolphin there was seen to affect a certain boy so that he would come to him wherever he chanced to espy him. But one time that he followed eagerly after the lad going towards the town, he shot himself upon the dry sands before he was aware and died forthwith. In view of this Alexander the Great ordained that this young boy should afterwards be the chief priest and sacrificer to Neptune in Babylon, interpreting the singular fancy that this Dolphin cast upon him as a great sign of the special love of that god of the sea to him and that he would be good and gracious to men for his sake.

"Egesidemus writes that in Iassos there was another boy named Hermius who used to ride upon a Dolphin over the sea and chanced at last in a sudden storm to be overwhelmed with waves as he sat upon his back, and so died and was brought back dead by the Dolphin who, confessing himself the cause of his death, would never retire again into the sea, but lay himself upon the sands and there died on dry land.

"There is no end of examples of this kind. The Amphilochians and Tarentines testify to dolphins being enamoured of little boys,

the boy as a prodigy. They questioned him, heard his story and repeated it to everybody they met.

"The next day large numbers swarmed on the shore and gazed out to sea. The boys swam about as usual—the hero of the story a little more cautiously than the others. Again the dolphin appeared and made for the boy who fled with his companions. The dolphin, to attract his attention, leapt out of the water, dived, twisted this way and that and played every manner of antic.

"The same thing happened the next day and the next, until the people, so accustomed to the sea, became ashamed of their fears. They approached the dolphin, called him pet names and even stroked him. And the boy who first became acquainted with him would swim alongside, jump on his back and be carried to and fro—as much in love with the dolphin as he believed the dolphin was in love with him.

"Other boys, too, swam with their friend and egged him on. What was most astonishing was that another dolphin appeared—but only as a spectator or attendant. He would allow no liberties to be taken with him. He merely led the other as a kind of escort just as the other boys did their leader. You would scarcely believe it—still it is perfectly true—but the dolphin, that played with the lad, would often leave the sea and dry himself on the sands. When he was thoroughly warm he would roll back into the sea.

"Octavius Avitus, the Pro-consular Legate, by some strange superstition was led to pour ointment on him on one occasion when he lay on the shore. But the dolphin was so upset by the action and the curious smell that he betook himself to the deep and was not seen for several days after. When he appeared again he was dull and listless; still he soon regained his spirits, became quite frisky once more and did his usual tricks.

"All the officials of the province used to come and see the sight. There was so much coming and going that the town began to lose its quiet retired character. So it was decided to put an end, on the quiet, to the poor innocent creature who had been the cause of all the excitement."

which induces me rather to believe the tale of Arion. This Arion, being a notable musician and player of the harp, chanced to fall in the hands of certain mariners in the ship in which he was. They, supposing he had good store of money about him which he had gotten with his instrument, were about to cast him overboard for the said money when he, seeing himself at their mercy, besought them in the best manner he could devise to suffer him before he died to play one fit of mirth with his harp. This they granted and a number of dolphins came flocking about him at his music and sound of the harp. Then the sailors turned him over shipboard into the sea; whereupon one of the dolphins took him upon his back and carried him safe to the bay of Taenarum." [48]

The nautilus anticipated the modern submarine, and at the same time could disport itself as a sailing ship.

"This fish, in order to rise to the surface, turns upon his back and heaves himself up little by little; to swim with more ease he discharges all the water within him (bilge-water, as it were) from a pipe. After this, turning up his two fore claws or arms he displays and stretches out between them a membrane or skin of a wonderful thinness. This serves him instead of a sail in the air above water. With the rest of his arms or claws he rows and labours under water, and with his tail directs his course and steers as it were with a helm. Thus he makes way in the sea with a fair show of a foist, or galley, under sail. Now if he is afraid of anything in the way he makes no more ado than to draw in water to ballast his body and so plunges down and sinks to the bottom.

"Mutianus tells another tale of a fish he saw in Propontis which carried, as it were, a ship of his own and made sail with it like some galley. It was a shell-fish, fashioned with a keel like a barge, with a poop embowed and turned up and armed in the prow with a three-forked pike. Within this (so he says) lay hidden another living creature resembling a Cuttle-fish, for no other reason in the world than to make sport and play with it for company. If it was a calm sea and the winds down, the passenger would put down his feet into the water like oars and row with them. But if a gale of wind was aloft he would make them serve instead as a helm to steer with. Then the shell-fish would spread and display itself like sails to gather wind; so that the pleasure of one was to carry the other in a vessel, while the other had his delight in working the ship and directing it like a pilot." [49]

Also Pliny noted certain fish that left their native element, thus emulating the aeroplane. Not only were there the flying fish, but the tunny and sword-fish would leap out of the water and sometimes come aboard a passing vessel when tortured by a creature "somewhat like a scorpion and as big as a spider" that fastened on them. On one occasion Augustus was walking along the shore at the time of the Sicilian war when a fish leapt out of the sea and fell at his feet. This was taken as a happy augury of victory. The lords of the sea, it was foretold, would be on the side of Cæsar; and so it proved.

Pliny's classification of fishes is roughly and readily arranged according to their coverings. Some had a hairy skin over them, such as the Seals and Water-horses. Others had only a bare skin, as smooth as that of the Dolphins. There were those with a shell like a bark, such as the Tortoise; in others the shell was as hard as the flint, like the Oysters, Mussels, Cockles and Winkles. Some, again, were covered with "crusts or hard pills", like the Locusts (lobsters): others with sharp pricks, like the Sea Urchins. Some were scaled, as fishes; others rough-coated, as the Soles, the skins of which craftsmen used to polish and smooth wood and ivory. Some had a tender and soft skin, as Lampreys and eels; others none at all, as the Pourcuttle, or cuttle-fish. It is to be noted that it was well known that the whales and sea-calves, or seals, brought forth their young alive. That they were originally mammals which had taken to the water as the easier method of procuring food —one of the most amazing facts of natural history—had not yet suggested itself.

Turtles, or "tortoises", in the Indian sea were reported so large that their shells could be used either for cabins or for boats and wherries.

The way of catching turtles was to find them asleep on the surface. Then three men would swim out, two to turn him on his back and the third to put a rope round him, by which he was towed to the land. Tortoise shell was cut into thin leaves and used to veneer beds, tables, cupboards and presses at Rome—an invention by Carvilius Pollio which Pliny, ever

on the alert to criticise anything new, considered a luxury leading to "riotous and superfluous expense".

The mystery of pearls was never solved. The explanation given was that they were a kind of fruit, the product of a dew which according to its quality affected the colour of the pearl. If the dew was pure and clear, then the pearls were white, fair and orient; if gross and troubled, the pearls were dim, foul and duskish—"pale (I say) if the water is close, dark or threatening rain in the time of their conception. From which it is plain that they participate more of the air and sky than the water and the sea". The "curst Sea-dogs", or sharks, were the greatest danger to the pearl-divers. They were believed to have a secret understanding with the pearl-fish and always to accompany them into deep water as a body-guard.

In the story about Cleopatra's stratagem, we may infer from a passage elsewhere that the pearls she was wearing were long and pear-shaped. But it seems a pity for the sake of the story that pearls do not dissolve in ordinary vinegar.

"Our dames take a great pride in having them not only hanging at their fingers, but also two or three of them pendant together at their ears. They call them Crotalia (or cymbals), as if they took a delight in hearing the sound of their pearls rattling together. Nowadays, too, it has come to this pass that poor men's wives affect to wear them because they would be thought rich; and it is a byword among them that a fair pearl at a woman's ear is as good in the street as an usher or lictor, for every one will give way to such a proud lady. Nay, our gentlewomen are come to wear them upon their feet and not at their shoe latchets only, but also upon their startops (shoes) and fine buskins which they garnish all over with pearl. For it will not satisfy them to carry pearls about them, but they must tread among pearls and walk, as it were, on a pavement of pearls.

"I myself have seen Lollia Paulina, widow of Caligula, when she was going to nothing more important than a wedding supper, so beset and bedecked all over with emeralds and pearls, disposed in rows, ranks and courses one after another, round about the attire of her hair, her neck, her borders, her peruke of hair, her bongrace and chaplet, at her ears pendant, about her neck in a

carcanet (necklace), upon her wrists in bracelets and on her fingers in rings; so that she glittered and shone again like the sun as she went. The value of these ornaments she rated at forty million of sesterces. Yet these jewels were not the gifts of the prodigal prince her husband but inherited from her grandfather, which he had got together by the robbing and spoiling of whole provinces. See the end of all those extortions and outrageous exactions! M. Lollius for receiving bribes and presents of the Kings in the East lost the favour of Caius Cæsar and drank a cup of poison—only, forsooth, for his niece Lollia to be hanged with jewels worth forty million sesterces and to be seen glittering and looked at by everyone by candlelight all a supper time!

"Nor is this the greatest example of excessive riot and prodigality. There were formerly only two Pearls, the fairest and richest that have ever been known in the world; and these belonged at one time to Cleopatra, the last queen of Egypt. This princess, when M. Antonius had feasted her day by day most sumptuously and spared no cost in the height of her pride and wanton bravery (as being a noble courtesan and a queen withal), began to make little of the expense and provision of Antony. When he demanded how it was possible to go beyond this magnificence of his, she answered that she would spend in one supper ten millions of sesterces. Antony (for he thought it was impossible) laid a great wager with her about it and she made it good. The morrow after, when this was to be tried and the wager either to be won or lost, Cleopatra made Antony a supper which was sumptuous or royal enough. However, there was no extraordinary service upon the board, at which Antony laughed her to scorn and by way of mockery asked to see a bill with the amount of the particulars. She answered that what had been served already was but a trifle of the real banquet and that she would yet in that supper make up the full sum, yea, she herself would eat beyond that reckoning, and her own supper should cost sixty million sesterces. With that she commanded the second service to be brought in. The servitors that waited at her trencher set before her one cruet of sharp vinegar, the strength of which is able to resolve pearls. Now she had hanging at her ears those two most precious pearls, the singular and only jewels of the world. As Antony looked wistly upon her and wondered what she would do, she took one of them from her ear, steeped it in the vinegar, and as soon as it was liquified drank it off. As she was

about to do the like by the other, L. Plancius, the judge of that wager, laid fast hold upon it with his hand and pronounced that Antony had lost the wager.

"There was the end of one pearl, but the fame of the fellow-pearl is equal to it. For after this brave queen, the winner of so great a wager, was taken prisoner and deprived of her royal estate, that other pearl was cut in twain in order that in memory of that one half-supper of theirs it should remain unto posterity, hanging at both the ears of Venus at Rome in the Pantheon." [50]

The sea serpent was of course a highly distinguished sea-monster. We come across several varieties. One kind was a fish that came to the surface of the water and waggled its tongue, which flamed and burned like fire and, when the nights were calm and still, gave out a shining light. Coleridge was inspired by similar stories to write:

> "Beyond the shadow of the ship,
> I watched the water-snakes:
> They moved in tracks of shining white;
> And when they reared, the elfish light
> Fell off in hoary flakes."

Another kind had horns almost a foot and a half long. When it was caught and let loose on land it very quickly scrabbled a hollow in the ground with its snout. (Something of the sort has been reported from Loch Ness.) Certain species of land-fishes were also stated to come out of the sea in the neighbourhood of Babylon to graze in the meadows, waddling along with their fins instead of feet, and wagging their tails as they went.[1]

[1] Matthew Arnold seems to have used the same local colour in his poem, *The Forsaken Merman*:

> Sand-strewn caverns, cool and deep,
> Where the winds are all asleep;
> Where the spent lights quiver and gleam;
> Where the salt weed sways in the stream;
> Where the sea-beasts, ranged all round,
> Feed in the ooze of their pasture-ground;
> Where the sea-snakes coil and twine,
> Dry their mail and bask in the brine;
> Where great whales come sailing by,
> Sail and Sail, with unshut eye,
> Round the world for ever and aye.

Crabs were odd creatures. When alarmed they could go backwards as fast as they could move forwards, and they fought like rams, butting at each other with their horns. When the sun passed through their own special sign of Cancer, their dead bodies could be seen lying on the shore ready to be turned into serpents.

There seem to have been many connecting links between snakes and fishes, especially in the case of the eels. One striking example was the "worm" that haunted the Ganges (probably confused with a boa, or python) said to be sixty cubits long, with two gills, azure in colour and so powerful that with its teeth it could seize the trunks of elephants coming down to drink and drag them into the water.

Lampreys and eels, Pliny tells us, wind and wiggle with their bodies within the water and "so erch (arch) forward as serpents do on the earth. They creep also when they are on dry land and live longer than the rest out of the water." Elvers returning from the breeding grounds in the depths of the Atlantic (although Pliny was of course unaware of the fact), were observed in the entrances of rivers. "On a winter night, when there is storm and tempest, a man will see rolling among the waves a wonderful number of these eels, wound and entangled one with another, so much so that in the nets devised to catch them there are found sometimes a thousand of them wrapped together in one great ball."

The red mullet was a great table delicacy. It is curious to read that it could not bear to be laughed at, and hid its head in the sand (imitating the ostrich), at the bottom of the water, from excessive self-consciousness. The more decorative scaurus (parrot-fish) was also a favourite dish. A fish not chosen primarily for its appearance was the muraena, a coarse-looking eel, raised in specially constructed tanks and specially fattened for the table. Then there was the cray-fish, "the locust of the sea", from which the French *langouste* is derived; lampreys "bred in certain lakes about the Alps"; and the barbel. As an example of the callous spirit of the Romans the barbel was carried about in globes of glass so that it could be

seen changing colour as it died.[1]

The tunny fishing was a very considerable and profitable Mediterranean industry, as it still is. The earliest sailors of real commercial enterprise came from Tyre and Sidon and traded along the neighbouring coasts—their ships

> "Freighted with amber grapes and Chian wine
> Green bursting figs, and tunnies steeped in brine."

These were the commonest and earliest articles of barter. The tunny was responsible for the name of the "Golden Horn" because of the golden harvest derived from this magnificent mackerel. Shoals of them were frightened by the sight of a white rock which shone from the bottom of the sea and caused them to swerve across to the cape opposite Byzantium. Tunny fishing was not regarded in the least as an art or sport: indeed the most commonplace and businesslike way of landing a big fish was adopted. Sometimes a fish would be found weighing a thousand pounds; then it was taken with a great hook linked to a chain, and dragged out of the river with yokes of oxen—a very different affair from the modern rod and line. The tunny ranked as the largest fish that was eatable. The choicest pieces were near the throat, the inferior near the tail. Mackerel, which belong to the same family, were chiefly supplied to the fish markets of Spain.[2]

The last word in sea-monsters was that frightful creature the octopus, or many-footed fish:

"I must not omit the reports of Trebius Niger, one of the retinue of L. Lucullus Proconsul of Baetica, as touching these Many-feet

[1] Pliny says that Fenestella called barbels "Mulli", because they resembled in colour "certain moyles or fine shoes". Seneca takes this fashion as the last word in degeneracy. "Suffer me", he says, "here to lay aside my subject, and to apply the scourge to luxury! Commend me for a beautiful sight, says one, to an expiring mullet. In the death struggle, as its life ebbs away, first a ruddy glow, then a pallor suffuses it. How symmetrical are the variations as it changes from tint to tint between life and death! Our somnolent, jaded luxury gets a long respite by means of this. Hitherto only fishermen have been able to enjoy this grand and beauteous sight. But why should we at the banquet be satisfied with a cooked, a lifeless fish! Let him expire on the very tray."

[2] A great deal of dried fish was exported from the Black Sea. Aristophanes made jokes about it, very much as the kipper is a vehicle of much of our own popular humour.

fishes called Polypi: namely, that they are most greedy of cockles, mussels and suchlike shell-fishes which, as soon as they feel themselves touched by the Polypes, shut their shells hard and so cut off the arms that had got within, and thus they feed on those who sought to make a prey of them. These Polypi foreseeing this lie in wait to spy when the fish gape wide open and put in a little stone between the shells; thus they thieve and without any danger get out the fleshy substance of the meat to devour it. The poor cockles by reason of a wedge between cannot meet, close or come near together. See how subtle and crafty these creatures are, which otherwise are most sottish and senseless. Moreover, Trebius Niger affirms that there is not another beast or fish in the sea more dangerous to do a man a mischief in the water; for if he chance to light upon any divers under the water or any that have suffered shipwreck and are cast away, he assails them in this manner. He catches fast hold of them with his claws or arms, as if he would wrestle with them, and with the hollow concavities between keeps a sucking of them (as it were cupping glasses set to their bodies in diverse places) till in the end he draws them dry. The only remedy is to turn them on their back, and then they are soon done and their strength gone; for in that position they have no power to clasp or comprehend anything.

"At Carteia there was one of these Polypi which often used to come out of the sea and enter some of the pickling-vats and rob them of their salt fish and so go his ways again. This he practised so long that in the end he roused the displeasure of the keepers of these cisterns with his continual and immeasurable filching. Whereupon they staked up the place and impailed it about to stop all passage thither. But this thief did not give over his accustomed haunt for all that, but managed to clamber over by a certain tree and so get to the salt fish. And he would never have been discovered had not the dogs by their quick scent found him out and bayed at him: for as he returned one night towards the sea they set on him and roused the keepers who were frightened at this sudden alarm, but more at the strange sight which they saw. First and foremost, this Polypus fish was of an immeasurable and incredible bigness; and besides, he was smeared and beraied (befouled) all over with the brine and pickles which made him hideous to look at and also to stink most strongly. Who would ever have looked for a Polypus there or recognised him by such marks as

these? Surely they thought they were dealing with some monster; for with his terrible blowing and breathing he drove away the dogs and at other times would lash and whip them with the ends of his long stringed winding feet. Sometimes he rapped and knocked them well and surely with his stronger claw-like arms, as it were with clubs. In short, he made such good shift for himself that only with much ado could they kill him, although he received many a wound by trout-spears which they launched at him. Well, in the end his head was brought to Lucullus for a wonder, and it was as big as a good round hogshead or barrel that would hold fifteen Amphorae. And his beards (for so Trebius called his claws and long-stringed feet) carried such a thickness and bulk with them that a man could hardly fathom one of them about with both his arms, such knockers they were, knobbed and knotted like clubs, and thirty foot long; and his teeth were answerable in proportion to the bigness of his body." [51]

CHAPTER VIII

Of Insects

BEES (which supplied the ancient equivalent of sugar), ants, silkworms, spiders (not strictly to be classed as insects), locusts, beetles and glow-worms are the chief of the smallest of creatures described by Pliny. Their study, it is urged, is not to be despised; for the insect, though a diminutive creature, was after all one of Nature's marvels:

"Come to the Wood-worm, what manner of teeth has Nature given it to bore holes and eat into the very heart of hard oak! Who hears any sound that she makes while at her work? We make a wonder at the monstrous and mighty shoulders of Elephants, able to carry turrets upon them: we marvel at the strong and stiff necks of Bulls and to see how terribly they will take up things and toss them aloft into the air with their horns; we keep a-wondering at the ravening of Tigers and the shaggy manes of Lions: and yet in comparison of these Insects there is nothing in which Nature's power is more seen. I would request therefore the reader that in perusing this treatise he will not come with a prejudicate opinion nor (because many of these silly flies and worms are only contemptible in his eyes) disdain, loathe and contemn the reports that I shall make thereof, seeing there is nothing in Nature's works that may seem superfluous or unworthy our speculation." [52]

Among the questions as yet unsolved was the doubt whether insects had blood or not. Also did they breathe, and had they bones? The ancients were at a disadavantage for answers to these questions in that they had no high magnifying glasses. Whether the glass globes used for fine engraving were employed in other directions is not known.

"How in these little bodies (nay, pricks and specks rather than bodies) can one comprehend the reason, the power and the in-

explicable perfection that Nature has showed therein? How has she bestowed all the five senses in a Gnat? And yet there are smaller creatures than they. Where, I say, has she made the plan of the eyes to see before it? Where has she set and disposed the taste? Where has she placed and inserted the instrument and organ of smelling? And, above all, where has she disposed that dreadful noise that it makes, that wonderful great sound in proportion of so little a body? Can there be devised a thing more finely and cunningly wrought than the wings set to her body? Mark what long-shanked legs above ordinary she has given unto them. See how she has set that hungry hollow concavity instead of a belly, and made the same so thirsty and greedy after blood; man's especially. Come to the weapon that it has to prick, pierce and enter through the skin, how artificially has she pointed and sharpened it! And being so little as it is, she has framed it for a twofold use; to wit, most sharp-pointed to prick and enter, and hollow like a pipe to suck in and convey the blood through it.

"Aristotle is of opinion that only those creatures have a voice as are furnished with lungs and windpipes; that is to say, which breathe and draw their wind. And therefore he holds that the noise we hear coming from Insects is no voice at all, but a sound occasioned by the air that gets within them and so being enclosed yields a certain noise and resounds again. And thus it is (quoth he) that some keep a humming or buzzing, as Bees; others make a cricking with a certain long train, as the Grasshoppers; for it is evident and well known that the air entering into those pipes (if I may so term them) under their breast and meeting with a certain pellicle or thin skin, beats upon it within, and so sets it a stirring, from which attrition comes that shrill sound." [53]

Pliny had no hesitation in declaring that insects did both breathe and sleep. As to breathing, he was correct to the extent that insects have a method of circulating air through enlarged pores in their integuments and are thus enabled to perform an action equivalent to breathing through lungs. On the question of their having bones Pliny also decided rightly that they have none—no internal structure such as a skeleton, but only a hard outer covering. These minor points, however, are dismissed as scarcely worthy of discussion, as mere "doubtful quillets".

Aristotle had left an excellent dissertation on bees and their habits, but some critics say that, in part at least, another hand, that of a practical and intelligent bee-keeper, wrote it. In it the question was left undecided whether a king or queen ruled the hive. Pliny definitely decided that the monarch was a king dwelling in his own palace; he confused the sexes, in ignorance that the drones were the males and the workers the undeveloped females.

In picturesque terms he describes how they gather and manufacture honey and wax, sucking the substance from the flowers and the gums of trees and mixing with it juices from the more bitter herbs in order to keep "other little vermins" from stealing the honey. The story of their commonwealth is entertaining:

"They have a policy and Commonwealth among themselves. They hold their several counsels, and there is not a swarm or cast that they have without a king and captain of their own; and, what is most admirable of all, there are civil fashions and customs among them. Moreover, being neither tame and gentle nor yet to be counted wild and savage, Nature has effected of so little a creature a thing incomparable. What strength of sinews, what force and puissance is able to countervail this great industry and effectual power of theirs! What wit and policy of man is answerable to their discreet and orderly course! Believe me, in this one point they surpass them all, that all things are common among them and they recognise nothing private and several.

"The manner of their business is this. All the daytime they have a standing watch and ward at their gates, much like to the *corps de guard* in a camp. In the night they rest until the morning; by which time one of them awakes and raises all the rest with two or three big hums or buzzes that it gives to warn them, as it were, with sound of trumpet. At which signal the whole troop prepares to fly forth if it be a fair and calm day, for they foresee when it will be either windy or rainy, and then they keep within their strength and fort. Now when the weather is temperate and the whole army is on foot and marches abroad, some gather together the virtue of the flowers within their feet and legs. Others fill their gorge with water and charge the down of their bodies with drops of such liquor. The younger sort go forth to work and carry, while the

elder labour and build within the hive. Such as carry the flowers stuff the inner part of their legs behind with the help of their fore-feet. Thus being full laden with their provision they return home to the hive with their burden, by which time there are three or four ready to receive them, and those ease and discharge them of their load.

"It is wonderful to observe the manner of their work. They remark the slow-backs, they chastise them anon, yea and afterwards punish them with death. Towards evening their noise begins to slack and grows less and less, until one of them flies about with the same loud humming with which she waked them in the morning, thereby giving a signal, as it were, and commandment to go to rest, much after the order in a camp. And then all of a sudden they are all hushed and silent.

"These pretty creatures hurt no fruit whatsoever. They will not settle upon a flower that is faded, much less on any dead carcase. They do not go from their hive about their business more than threescore paces; and if it chance that they do not find sufficient flowers within these limits, out go their spies whom they send to discover forage farther off. If in this expedition they are overtaken by the night, they couch upon their back for fear lest their wings should be overcharged with the evening dew.

"The houses and habitations that Bees build first are for the Commons, which being finished they set in hand a palace for their king. If they foresee that it will be a good season they make pavilions also for the Drones. Although they are of themselves bigger than the very Bees, yet they take up the least lodgings. Now these Drones are without any sting at all—as one might say, imperfect Bees—and the last fruit of such old ones as are weary and able to do no more good; and indeed they are no better than slaves to the right Bees. Therefore the other master Bees have them at their commandment; if any drudgery or such-like business is to be done, out they are sent first, and should they make slow haste in that they are set about, sure they are to pay for it and to be punished withour mercy.

"Now as touching the generation of Bees and how they multiply and increase there has been much dispute among the learned and a nice question this is. For Bees were never seen to engender one with another and therefore most men have been of opinion that young Bees must needs be made of flowers fitly and handsomely

laid together and composed according to Nature's lore. Others say that one master-Bee which is the king in every swarm, begets them all and that he forsooth is the only male, bigger than the rest and more strong because he should not faint and fail in the action.

"This is certain that Bees sit as Hens do; and that which is (after a sort) hatched by them, seems at the first to be a little white grub or maggot, lying crosswise overthwart the honey and sticking so fast to it that it seems to feed thereon. The king that shall be is at first yellow and of the colour of honey, as if he were made of the most choice and excellent flower of all the rest; he is nothing like to the other grubs but from the very first has wings. The manner and experiment hereof was once seen in a farm near Rome, belonging to a Nobleman who had once been Consul: for he caused his hives to be made of lantern horn, so that a man might see through into them.

"As for the young bees they begin work with their mothers and are trained by them to learn how to gather honey. These young people have a young king also unto whom they make court and whom they follow. And many such kings are bred at first; but when the Bees are grown big, they all agree with one accord and voice to kill those that are most untoward among them, for fear they should make divisions and factions. The kings are of two sorts; those that are red all over are better than the black or parti-coloured. All the race of them are very fair and goodly to look at; and twice as big as the rest, their wings shorter, their legs straight; in their port and manner of march more stately; carrying in their front a white star like a diadem or coronet; far brighter also and neater than the common sort.

"In one small matter that is daily seen in our country houses all the Authors who have written of Agriculture are not yet agreed: namely, whether the king of Bees alone has no sting and is armed only with majesty: or whether Nature has bestowed a sting upon him and denied him only the use thereof. For it is certain that this great commander over the host does nothing with his sting, and yet they are all ready to obey him. When he marches abroad the whole army goes forth likewise. Then they assemble together and environ him round about; they are his guard and keep so close that they will not suffer him to be seen. At other times when all his people are busy in labour, he himself (as a right good captain) oversees their works, goes about from one to another, encouraging them

in well doing and exhorting them to ply their business. About his person he has a certain guard ever attendant; he has his Lictors and officers always in readiness, in token of majesty and princely port. He never sets forward except when the whole swarm is pressed likewise to go forth; and in truth before a voyage and expedition, for many days together, there is an extraordinary humming and noise within while they prepare to dislodge, trussing up as it were their bag and baggage and expecting only a fair day of remove. And supposing that the king has in some battle lost one of his wings, yet his host will not forsake him and fly. When they are on the march, each one desires and strives to be next the prince, as if they took a joy and pride to be seen by him in the performance of their devoir. If he begins to be weary, they support him with their shoulders. If he is tired and faints outright they carry him full and whole. Where the king once settles and takes up his resting place, there they all pitch their tents and encamp." [54]

The poets have drawn many of their favourite illustrations from the bees. If we compare the passage out of *Paradise Lost* describing the assembling of Satan's followers, we see a strong likeness to Pliny's account.

"As bees
In spring-time, when the Sun with Taurus rides,
Pour forth their populous youth about the hive
In clusters; they among fresh dews and flowers
Fly to and fro, or on the smoothéd plank,
The suburb of their straw-built citadel,
New-rubbed with balm, expatiate, and confer
Their state affairs: so thick the aëry crowd
Swarmed and were straitened."

Superstitions were almost as rife about bees as about birds. If they hung like clusters of grapes on men's houses or on the temples of the gods, folk had immediate recourse to devotions and sacrifices to appease the heavenly powers. That bees had powers of discrimination was proved by their settling on the lips and mouth of Plato when he was a babe, by which sign they foreshadowed his singular eloquence. Dryden used the image in a well-known Ode:

"And if no clust'ring Swarm of Bees
On thy sweet Mouth distill'd their golden Dew. . . ."

How were insects propagated? The answer was—spontaneous generation. Bees and wasps appeared of themselves in the carcases of certain animals. (Samson found a swarm of bees and honey in the carcase of the young lion he had killed.) Different substances produced different insects; but there seems to have been an order of precedence in these curious processes of generation. Out of the carcases of lions and oxen, being the nobler progenitors, the bees proceeded; out of horses came the hornets, wasps and, presumably, horse-flies as well; asses' carrion, being the lowest in the scale, occasioned the ignoble beetle. Aristotle held that fleas, mosquitoes, day-flies were also formed out of putrifying substances; and as a parallel among the fishes, eels were supposed, from the time of Aristotle downwards, to be generated from horse-hair—preferably the hair of a stallion—when it was well steeped in a shallow pool.

The butterfly had a more dainty origin. It was bred of the dew which settled upon the radish leaf in the beginning of Spring. This dew hardened with the heat of the sun and from it came a little grub which in the end gathered a "hard husk or case about her". This was called Chrysalis: after some lapse of time the "kex or husk is broken and he proves a fair flying butterfly".

Other insects were believed to be bred from raindrops lying on the ground. Timber, our own bodies, carrion, the hair of the head, cloth, wax, dust, were all of them spontaneous producers of insects. Even the common little flies were derived from a kind of moist powder in the crannies of the ground.

It was a pardonable mistake to assign spiders to the insect class, the modern distinction lying in such technical points as the number of legs and eyes, and the two- instead of three-department body belonging to the *Arachnidæ*. The cleverness with which the spider constructs its web is well observed:

"She begins to weave at the very middle of the web and when she had laid the warp brings over the woof wound in rings. She dispenses the meshes by even spaces and as they increase from narrow to be broader, they are held and tied fast by knots that

cannot be undone. Mark, I pray you, how artificially she hides the snares in that net of hers, made into squares, to catch the poor flies. See how slack and hollow the net is made to abide the wind for fear of breaking, and so much the better to fold and enwrap whatever comes within her reach. Is there any Architecture comparable to the vault and arched frame of her nest and hole? And to keep out the cold see how it is wrought with a longer and deeper nap than the rest! What subtlety is this of hers to retire into a corner so far from the middle, as if she went about some other business! What shall I say of the strength of this web which has to resist the puffs and blasts of winds, of the toughness to hold and not break, notwithstanding a deal of dust weighs and bears it down? Many a time you will see a broad web reaching from one tree to another; and this is when she learns to try her skill. She stretches a thread and warps it from the top of the tree down to the ground, and up again she whirls most nimbly by the same thread. Now if it chance that anything light into her net, how watchful, how quick-sighted, how ready she is to run! Even if it be snared in the very skirt and utmost edge she always scuds into the middle, for by shaking the whole net she entangles the fly all the more. When the web is slit or rent she presently mends and repairs it, and that so evenly and small that a man cannot see where the hole was darned and drawn up again. Moreover, many prognostications depend upon these Spiders; for against any inundations and overflowings of rivers they make their cobwebs higher than they were wont. In fair and clear weather they neither spin nor weave. Upon thick and cloudy days they are hard at work; and therefore many cobwebs are a sign of rain. Some think it is the female that spins and the male which hunts and gets in the provision for the family, thus ordering the matter equally in earning their living, as man and wife together in one house." [55]

Spiders were a menace to bees in whose hives they wove their cobwebs with fatal results to the inmates. They also hunted young lizards, and the fight which ensued when they met was, Pliny says, a worthy spectacle to behold, fit for a king.

The fierce instincts of spiders were equally well known with regard to their own kind. Pliny admits that they made devoted mothers, but more than hints that the mother is

eaten by the family as soon as the family grows up. This may be a confusion with the fact that with most spiders the female after the nuptials devours the unfortunate male, unless, as in the case of the Water Spider, he is large enough to take care of himself. Otherwise, marriage too often proved a tragic failure.

Ants, like bees, enjoyed a kind of commonwealth. There was the same tireless industry enforced, the same collecting of stores. Also there were regular market days for "a mutual interview and conference together. And verily, it is a world to see, how they will assemble; what running, what greeting, what intercourse and communication there is between them, while they are inquisitive as they meet one with another! What news abroad, even like merchants at a Bourse!"

The silkworms of Cos were deservedly famous. They came spontaneously from the flowers which were beaten down by the rain from the trees. The blooms, as they lay on the ground, were quickened into life, and it was believed that as caterpillars they gathered the cotton and down of the leaves and carded it with their nails, finally wrapping themselves into little round balls hung amongst the branches. Men gathered these cocoons and put them away in earthen pots. Finally a small thread was spun from which a fine silk cloth was made. Soldiers liked to wear silk in the summer, as the weight of a good corslet and armour was considerable.

Beetles were of many different kinds. There were large stag beetles with long horns toothed like pincers which they could bring together and so nip and bite. Beetles were worshipped by the Egyptians as having an innate divine power; frequently they were hung about the necks of babes as remedies against sickness. One variety is described as tumbling upon their backs in dung which they rolled into great round balls with their feet for the purpose of making nests for the little grubs that were their young, so as to protect them against the cold of winter.

Glow-worms shone in the night like sparks of fire; but it was only the brightness of their sides and tail that shone,

because when they shut down their wings it was observed that they made no show of light. The opposites of the glow-worms were the black beetles which loved darkness.

The ancients had practical experience of the devastation caused by locusts. It seems that the climate of India, as with the ants, stimulated their growth to such an unusual extent that they are credited with being occasionally as much as a yard long, a fact that accounts for the curious use to which their legs and thighs were put, when thoroughly dried—namely, for the making of saws. These must be regarded as exceptional in point of size. Otherwise the common sort were classed amongst the most intelligent and enterprising of insects, and entirely normal.

"They know when a famine is toward; for which reason they seek for food in far countries. Their coming is therefore holden for a plague of the gods, proceeding from their heavy wrath and displeasure. In their flight they keep such a noise with their wings that men take them for some strange birds. They shade and darken the very Sun as they fly, like a great cloud, insomuch that the people of every country behold them with much fear lest they should light in their territory. Where they settle, they cover whole fields of corn with a fearful and terrible cloud. Much they burn with their very blast, and no part is free but they eat and gnaw even the very doors of men's dwelling-houses. Many a time have the people of Rome, fearing a great famine and scarcity, been forced to have recourse to the Sibylline Books for remedy, and to avert the ire of the gods. In the Cyrenaic region within Barbary it is ordained by law to wage war against them every three years; that is to say, first to seek out their nests and squash their eggs; secondly to kill all their young; and last of all to proceed to the greater ones. Yea, and a grievous punishment lies upon the man who is negligent in this behalf, as if he were a traitor to his prince and country. Moreover, within the Island Lemnos there is a measure set down how many every man shall kill and show that measure full of dead Locusts. For this reason also they make much of Jackdaws and Choughs, whom they honour highly because they fly to meet the Locusts, and so destroy them. See in how many parts of the world this hurtful and noisome vermin is dispersed and spread; and yet in Parthia they are taken for very good meat. The voice that they

have (such as it is) seems to come from the hinder part of their head; for about the jointure of the shoulders to the nape of the neck they are supposed to have certain teeth, which by grating and grinding one against the other yield a kind of crashing noise, like the Grasshoppers at midsummer's Sunstead or solstice." [56]

The locust[1] was in most respects looked upon as the weirdest and strangest of all insects. It embodied in a very curious manner, on a miniature scale, the characteristics of several living creatures infinitely larger. In the *Arabian Nights* there is a description of this "beast", as it is called, which was said to hate the sons of Adam with so intense a hatred that it had in him the make of seven other strong and violent beasts. It had the head of a bull, the wings of a vulture, the feet of a camel, the tail of a serpent, the belly of a scorpion and the horns of a gazelle. If a locust is examined under a magnifying glass this will be found a remarkably accurate description and may partly account for the sinister reputation attached to the insect.

[1] As to dried locusts as a form of diet Herodotus tells us that between Egypt and Fezzan the inhabitants chased the locusts, dried them in the sun, ground them to powder and sprinkled this composition on their milk—a nutritious beverage comparing favourably, no doubt, with modern prepared milk foods.

CHAPTER IX

Of Flowers and Herbs

In looking through the lists of botanical authorities used by Pliny, the first names that strike the eye are those of Varro among the Latin authors, Aristotle and his pupil Theophrastus among the Greek.

The title of being the "father of botany" has been assigned to Theophrastus. His scientific works covered almost as wide a field as those of Aristotle, but the most famous by which he is best known is his "history" of plants. A notable and original discovery standing to his credit was the difference existing between the internal structures of palms and other trees; also that the cotyledons, the leaves contained in the seed, differed from the leaves produced on the stem. By such discoveries he laid the foundations of modern botany.

Pliny does not go so deeply into the scientific side of plants. He generalises over the beauty of flowers, the pleasure and delight they give; yet "Nature would have them to live and die in one day, good only to content the eye or please the sense of smelling: a great document and lesson for us men to learn, how all things that flourish most lovely and are the gayest in show fade the soonest and are gone suddenly." But to the practically minded Roman there was more to be said for vegetation than a moral concerning its charm and fragility. Plants were of inestimable value as a vital source of health, the basis of all medicine. The belief existed that every ailment had its certain cure among the herbs if only it could be found, and this conviction took a firm hold on the imagination. "The speculation thereof is infinite if a man considers the number of Herbs and Flowers together with their odours and colours,

the diversity of their juices, their virtues and properties to cure men of their maladies or to give pleasure and contentment to their senses."

This enthusiasm for herbal medicine, Pliny tells us, was so insistent that men would climb to the summits of mountains and search into every vein and fibre of the earth to discover the hidden virtues of every root and the properties of the leaf of every plant. One great incentive was the fixed belief that birds and beasts knew as a matter of instinct where to find the herbs to cure their ailments, and so were their own physicians and could discover their medicines for themselves. This belief has lingered in many quarters to the present day. The writer knew a huntsman who regretted he had not had the opportunity of cutting open a sick fox to see what plant it had eaten to cure a certain disease from which it was suffering. Human beliefs persist and are curiously hard to eradicate.

As many as eight books of the *Natural History* are devoted to different forms of vegetation. Pliny's treatment is extremely free—so discursive, in fact, that it is difficult to deal adequately with his information. But he manages to make it entertaining in spite of the deficiencies of the old scientific vocabulary which leaves a great deal of his matter still open to conjecture. The same confusion has arisen with many of the Biblical plants and trees which by no means in every case signify the plants and trees that their names are supposed to indicate.

When Pliny speaks of the Roman gardens he generally means the plots of ground where flowers and simples were cultivated as one of the most important duties of the housewife if the larder and medicine-chest were to be kept well stocked. But he allows a word for the famous gardens and parks of mythology and history:

"Our forefathers had nothing to speak of in more account than the Gardens of the Hesperides, of Adonis and Alcinous; as also those pendant Gardens upon terraces and leads of houses of Semiramis, Queen of Babylon, and Cyrus, King of Assyria. Now for this present (to go no further back than Rome) the Roman kings made great store of Gardens and cultivated them with their own hands.

For we read that Tarquin surnamed the Proud (last King of Rome) was in his garden when he sent that cruel and bloody message of his.

"There are certain religious or ridiculous superstitions of some who we see ceremoniously bless their Garden to preserve them against the witchcraft and sorcery of spiteful and envious persons. Therefore they set up in Gardens ridiculous and foolish images of Satyrs, Antiques and such-like as good keepers and remedies against envy and witchcraft; although Plautus assigns the custody of Gardens to the protection of the goddess Venus. And even in these days, under the name of Gardens and Hortyards there are many dainty places of pleasure within the city: under the colour and title of them men are possessed of fair closes and pleasant fields, and of proper houses with a good circuit of ground lying to them, like pretty farms and granges in the country. All of which they term by the name of Gardens.

"At Rome a good Garden was thought of as a poor man's chievance (estate); it went (I say) for land and living. The Garden was the poor commoners' shambles (stalls); it was all the market-place he had wherewith to provide himself with victuals. What a blessed, what a secure and harmless life that was, so long as men could be content with such a pittance! But I suppose it is better to satisfy the appetite of our wanton gluttons and bellygods and search in the bottom of the deep sea to get oysters, to have no fear of tempest or shipwreck; better to look for dainty birds from beyond the River Phasis in spite of the danger to those, according to the fearful tales about them, that approach near to them; better to chase the wild and savage beasts of the forest and fight with them, being in danger of being devoured as a prey by the animals which must soon after serve as venison for other men to eat.

"To come again to these commodities of the Garden, how cheap they are! How fitted not only to fill the belly and satisfy the hunger, but also to please the tooth and content the appetite, if it was not that wealth and fullness stand in the way! It might be endured that apples and other fruits of the trees such as are more exquisite than the rest in regard of their beauty, bigness, pleasant savour or strange and monstrous manner of growing against the course of Nature—that these dainties should be reserved for the rich; that wealthy personages should be served at their table with old wines and drink no other except what was wine before they were born: but why should a cabbage be pampered to such a size that a poor man's

board will not hold it? Dame Nature ordained at the first that Asparagus should grow wild so that every man might gather them to eat; and now behold, they are cherished carefully in Gardens! From Ravenna you will have Garden Asparagus as fair and big as three of their crops or heads will weigh a good pound and are sold after three a Roman As. Oh, the monstrous bellies there are nowadays! The excessive gluttony and gormandising which reign in the world![1] It would be surprising indeed for the poor asses and such dumb beasts to be forbidden to feed upon Thistles, and yet the Commons of Rome dare not touch them (that is, the artichokes which are no better than Garden-Thistles).

"That part of the Garden, which serves a house with poignant herbs instead of sauce to give a commendable taste and seasoning to our meat, shows plainly that the master and mistress were not wont to run in the merchants' books for spicery, but changed the Grocer's or Apothecary's shop for the Garden. They sought not for pepper out of India or for any Kitchen spices imported from far countries. Let us therefore give to Gardens their due honour. Let us not deprive things of their credit and authority because they are common and not costly. For I may tell you, some of our nobility, the best of the city, have not disdained to take their surnames from thence, as we see in the noble house of the Valerii, some of whom were not ashamed to be called Lactucini, in regard to the best kind of lettuce that they had in their Gardens, or affected most. And here I must mention that certain Cherries bear our name and are called Plintana, in testimony of our affection and love to that; which reminds me that Virgil says how hard it is for such small matters as these to gain any honourable reputation." [57]

[1] Seneca also has something scathing to say on the subject of gluttony which gives us a glimpse of the manners of the period. "Digestion is spoiled through indulgence. Breakfast is heaped upon a supper prolonged till daylight. While the revellers are literally bursting with the lavishness and variety of the courses, heavy drinking plunges them still deeper in the mire. Though they protect the banquetting table with draperies and windows, and seek by roaring fires to banish winter's colds, nevertheless the languishing appetite, exhaused by its own heat, yearns for something new to revive it.

"Good heavens! how easy a thing it is to quench the thirst of health! But what feeling can jaws retain which are deadened and numbed by scalding food? These epicures can have nothing cold enough, neither can they have anything hot enough. Mushrooms taken from the fire and hastily dipped in their special sauce are crammed down the throat almost boiling, and the heat has to be allayed by draughts chilled in snow. . . . You must now search for something colder still; for a stimulant that is habitual is no stimulant at all."

Pliny's own preference evidently lay in the direction of market gardening and the cultivation of simples. The growing of flowers must have been very much a side issue, as is the manner of cottage gardens. Necessities of life were the first consideration, the use of flowers as a personal adornment being firmly discouraged by the stricter class of Roman. Such signs of weakness and effeminacy were held to be typical of the luxurious Greeks rather than of the frugal and industrious Italians. Roses, it is true, were cultivated in vast quantities, but mostly for religious, culinary and medicinal purposes. Thirty-two remedies were allotted to the rose—quite apart from its use as a pleasant flavouring for various dishes. Twelve varieties in all are mentioned, of which the roses of Praeneste and Capua were the most famous.

Four varieties of lilies were cultivated, three of narcissus, seventeen of violets and forty-one of the iris. "Lilies" as a term of description has always been loosely applied. The "Lily of the Valley" in the Bible referred to the scarlet anemone and often the word was used merely to denote beautiful flowers. But the Madonna Lily is definitely indicated by Pliny as the most beautiful of all the varieties; he mentions its weak and slender neck and the head of an incomparable whiteness bending and nodding downwards. A pleasant gardening touch that you might read in any modern journal is the advice to plant lilies amongst roses in order to show a succession of bloom. Narcissus was changed into a flower and to the Greeks the blossom (identical with the Rose of Sharon) was associated with imminent death, an idea extended to the fields of daffodil —the modern equivalent of the meads of asphodel. It was the last flower gathered by Proserpine, and has remained constantly with the poets as the emblem of grief:

"And Daffadillies fill their cups with tears."

Violets, too, had a sombre association from the custom of placing them on graves. The hyacinth was yet another flower with sad reminiscences, as it was said to carry the impress of Apollo's grief on its leaves—the veins correspond-

ing to the Greek letters Aiai (alas!). It was a flower, too, that sprang from the blood of Ajax; just as the anemone, which only opened when the wind (*anemos*) blew, marked the spot where Adonis bled:

> "A purple flower sprung up, chequer'd with white;
> Resembling well his pale cheeks, and the blood
> Which in round drops upon their whiteness stood."

In a less poetical capacity the anemone served as a charm. "A man should gather the first he sees in any year, saying, 'I gather thee for a remedy against tertian and quartan agues'. Which done, the party must lap and bind the flower in a red cloth and when required either hang it about the neck or tie it to the arm or some other place." A typical instance of the ritual of the so-called "shizotomist" school.

Pœonies, the largest of the buttercups, were grown in Roman gardens: also the smaller kinds—the crowfoot, or crowflower, and goldilocks. "Violets", as Holland points out in a marginal note, was a very wide term, including such sweet scented plants as stocks and wallflowers. It was also a class in which the foxglove figured; marigolds even (although attention was drawn to their unpleasant scent) came under the same heading. This is only one example of the loose method of arranging plants before more scientific methods prevailed. Pliny brackets together such dissimilar types as cowslips, primroses, lychnis and mullein ("High-taper") and the reason seems to be that his mind is more centred on their medicinal values than their appearances. He casually remarks that to distinguish these herbs into their different kinds is a needless piece of work considering that they agree in the same effects—namely, in the making of a disagreeable draught which " by the effect that it works makes amends". This is a candid admission of the principle that the nastier the potion the sharper the cure. Pliny's occasional ironical tone does not suggest that he is lacking in discrimination.

Kings and queens, or their physicians, have often, we find, given their names to plants. The Euphorbia, distinguished

by the white liquor it produced, is one instance. Euphorbus was King Juba's physician. When the king became ill he called in another doctor "and these two brethren physicians joined together in council and gave direction to wash the body all over in much cold water after the hot bath or stove, thereby to knit and bind the pores of the skin; for before their time the manner was to bathe in hot water only, as we see plainly in the Poet Homer".

Another herb, the Lysimachia, derived its name from King Lysimachus who rated its virtues extremely high. When laid upon the yoke of two beasts which were not pulling well together it would "stay their strife and make them agree well enough". The Gentian, too, was called after King Gentius of Illyria. And Queen Artemisia adopted the herb Mugwort to herself, calling it by a far prettier name, Artemisia; and nowadays it happens to be the basis of a world-famed insect powder.

Gardens must have been reticent in tone, for the range of colour was not great. Vegetables indeed held the more prominent place. It is not surprising to find that the pursuit of gardening conduced to longevity. Pliny quotes the case of a certain Antonius Castor as an example. "I had the opportunity of visiting his garden in which, though he had passed his hundredth year, he cultivated vast numbers of plants with the greatest care. Though he had reached this great age he had never experienced any bodily ailment, nor were his memory or natural bodily vigour impaired." These excellent results, it may be noted, were due to the remedial qualities of the vegetables, not to the beneficial effects of the exercise in the open air. The number of remedies attributed to vegetables is astonishing; eighty-seven to cabbages, sixty-one to garlic, twenty-seven to onions, forty-two to lettuce, twenty-four to asparagus, forty-three to the radish, eleven to elecampane (a favourite condiment, by the way, of young Honeyman in *The Newcomes*), twenty-six to the wild and nine to the cultivated cucumber. Then there were the herbs used for flavourings, which also had their remedies—eighty-four attributed

to rue (a well-tried panacea), twenty-five to pennyroyal, forty-one to mint which the Jews used with the paschal lamb, sixty-one to anise, and forty-four to mustard. Still, in spite of this superabundance of medicine in the kitchen garden, there was a strong tendency to neglect home-grown remedies and to rely upon novelties with a reputation from abroad:

"Nowadays we use no other drugs but those that come from Arabia and India. And if a man ail never so little, or have the least push or wheal about him, he must have some costly Physic forsooth for it, such as a plaster that came from as far as the Red Sea: whereas in truth the right remedies appropriate for every malady are no other than such as the poorest man feeds on every night at his supper." [58]

But some of these "remedies" grown in the garden must have been very uncertain in their action. Seventeen remedies, for instance, are ascribed to the gourd. One variety—a risky recommendation—can be identified with the kind responsible for the "death in the pot", mentioned in 2 *Kings*, the effects of which Elisha was happily able to neutralise at Gilgal. This gourd, as may be imagined, was capable of extremely violent reactions. The safer and still popular cucumber was a favourite plant with Tiberius. He would never be without it and cultivated the plants in movable frames, or raised beds mounted on wheels, so that they could be moved about to receive the full heat of the sun during the day.

Lettuce as a salad was a famous specific for promoting the appetite. We are assured that the life of Augustus was once saved by eating it, on the advice of his own physician, whereas previously other medical advisers had strictly forbidden him any indulgence in this most innocent diet. Wild cabbages were eaten. Scurrilous songs were sung by the soldiers of the Emperor Julian on the theme that these cabbages were all that they had to live on at the siege of Dyrrhachium. We are told in reference to cabbage-culture that the pest of caterpillars can be averted by steeping the seed in the juice of the house-leek. If this failed, the skull of a beast of burden

could be hung on a stake in the garden, care being taken that it should be the head of a female beast.[1]

A river crab would also scare away birds, we are told. These practices must have been due to some curious superstition, unless the sight of strange and weird objects might have been thought likely to frighten away intruders. Applied, however, to caterpillars it is difficult to see how they could have proved efficacious.

Odd examples of flower lore are constantly recurring. The celadines and hawkweeds—not very dissimilar—were associated with birds; the one with the swallows which come and go with the flowers, the other with the hawks. But the same story is told of both, that the older birds used the plants to sharpen the vision of the young ones. Buttercups were "of a caustic and burning quality" and were recommended for skin diseases; on similar grounds they were not lightly valued as a hair restorer.

Plants which were inclined to irritate the skin came, as one would expect, well within the sphere of physic. Amongst these was the stinging nettle. By touching the legs of persons in a lethargy, or on the forehead, the patient might be roused. This sounds plausible enough; but we are surprised to learn that for gout the leaves were beaten up with bears' grease and taken internally. Also to cure the bite of a salamander, Apollodorus prescribed nettles to be taken in the broth of a boiled tortoise (turtle soup!). Parkinson said—with what truth we know not—that Cæsar's soldiers found the climate of Britain so bitterly cold that they rubbed their bodies with nettles to keep themselves warm. Another medicine with a long history is castor oil, to be taken, so Pliny recommends, with an equal quantity of hot water. Another use (still in vogue) was to assist the growth of the hair.

Insomnia was an ailment not confined to modern times.

[1] The same idea has survived, to judge from a letter that recently appeared in *The Times* from a correspondent whose gardener was in the habit of hanging a horse's skull on an apricot tree to encourage it to bear fruit. It appears that horse and camel skulls are still hung by Arabs and negroes on the date palms for similar reasons.

Panaces, water betony and aristolochia were amongst the herbs prescribed for smelling, and also for anointing the head, in order to procure sleep. Houseleek and sedum, wrapped in a black cloth (a useful piece of symbolism) could also advantageously be laid under the pillow or bolster of the sick person, provided—and this was important—that the patient had no previous knowledge of its presence. Oenothera, or evening primrose, was another specific for sleeplessness; mixed with wine it could be relied on to make the heart merry and so conduce to slumber.

The sea plant, Samphire, was reckoned good for the complexion; it made folk "look with a more lovely and cheerful colour". It was also commonly eaten in salads. Historically, or mythologically, it was the dish set by Hecate before Theseus. Being in taste aromatically pleasant, it was extensively used as a pickle, as indeed is still the custom in various parts of Europe. A judicious warning is given not to be too bold with it. A herb with kindred properties to rhubarb was Leontopodion, or Lion's paw, or Our Lady's Mantle. And saffron comes in as an antidote for drunkenness. "When our wine-knights purpose to sit square at the tavern and carouse lustily, if they drink Saffron they need never fear the overturning of their brain and it will make them carry their drink well."

It is impossible to mention all the plants and their reputed qualities. Only a few other examples can be taken, such as the Crane's-bill (from *geranos*, a crane; hence geranium), an attractive nickname, because "in the tops of the branches and springs little buttons or heads appear like Crane-bills"; the "Rest-harrow" so called not because it grows where the horses rest, but because it plagues, or "arrests", the plough by its obstinate and prickly branches clinging to the ground; the Centaury which cured Chiron, the Centaur, of a wound in his foot; Heliocryson, or Chrysanthemum, a plant of good fortune worn by the Sages of Persia; the Daisy (the "gowan", about which Mr. Micawber entertained some uncertainty); the Valerian or All-heal, still used as a nerve medicine; Woad

"with the juice of which the women of Britain, married wives as well as the young maidens their daughters, anoint and dye their bodies all over, resembling by that tincture the colour of Moors and Ethiopians". Amongst the rest the Saxifrage had a curious reputation. This plant, growing among the rocks, was supposed to have a wonderful knack of breaking up the stone—hence its name—although it was known that it had the least possible amount of root.

A short account of plant decoration, both natural and artificial, will be of interest as showing how the making of nosegays, garlands, coronets, globes or chains of flowers became a popular amusement and how these "decorations" were used as tokens of honour.

"In the earliest days the Greeks used to crown only with branches of trees those brave men who won the prize in their sacred Games and solemn Tourneys or exercises of activity. Afterwards they began to beautify and enrich their chaplets of triumph with flowers. Pausias and Glycera, the artificial maker of such chaplets set them first a-work. This painter was wonderfully enamoured upon the said Glycera and courted her by all the means he could devise. He would paint in bright colours the flowers she set with her fingers into Garlands; and she strove to alter her handiwork every day to drive him to a non-plus, or at least put him to his shifts. So that it was a very pleasant and worthy sight to see on one side the works of Nature in the woman's hand and on the other the artificial cunning of the painter. At this day there are to be seen pictures of his, and one above the rest entitled Stephaneplocos (a garland-maker) wherein he painted his sweetheart Glycera twisting and braiding Coronets and Chaplets as her manner was.

"Then there soon came into request those Chaplets that are called Egyptian; and after them Winter Coronets, that is, at the time when the earth afforded no flowers to make them. These were made of horn shavings dyed in sundry colours. So in process of time the name Corollae crept into Rome (as one might say, small Garlands); for these Winter Chaplets at first were very pretty and small. Not long after them followed the costly Coronets (called Corollaria) made out of thin leaves and plates of Latton (copper or tinsel) either gilded or silvered over, or else set out with gold and silver spangles and thus presented.

"Crassus the rich was the first man who at the solemn games and plays in Rome gave away Chaplets of gold and silver resembling living flowers and foliage. Afterwards these Coronets were also adorned with ribands for more honour and state, hung with plates of gold wrought, chased and engraven and garnished with twinkling spangles besides.

"The Law used to be very strict and severe about wearing Garlands not won as prizes but only for pleasure and pastime. We read that Fulvius Argentarius during the second Punic War, upon information that in the open daytime he only looked forth of a gallery he had in the Public Forum with a garland of Roses on his head, was by authority of the Senate committed to prison and not enlarged before the end of the war. P. Munatius, having taken from the head of the statue Marsyas a Chaplet of flowers and set it upon his own and thereupon being ordered to prison by the Triumvirs, called upon the Tribunes of the Commons for their protection: but they deemed him worthy of this chastisement. See the discipline and severity at Rome and compare it with the looseness of the Athenians, where youths ordinarily followed revels and banquets and yet in the forenoon would frequent the schools of Philosophers to learn good instructions of virtuous life! Amongst us the only example of the abuse of Garlands is that of the daughter of Augustus Cæsar, late Emperor, who with groan and grief of heart complained in some letters of his still extant that she was given to such riot and licentious looseness that night after night she adorned with Garlands the statue of Marsyas the Minstrel." [59]

Evidently a line of distinction was drawn between the use and misuse of flowers, which it was expedient for the youth of the city to observe. This was due to the association of flowers with religion. Sir James Frazer favours the idea that wreaths and crowns were amulets before they were ornaments—not so much to adorn the head as to protect it from harm by surrounding it with a plant or a metal—by anything, that is, sufficiently magical to ward off baneful influences. It is on this supposition that kings and priests were believed to wear crowns in order to preserve their sanctity. Dead bodies, doors of houses and memorials would be decorated with the same intention. It would in some obscure way seem that the wreath insulated the wearer from the approach of evil.

In Pliny the chaplet or wreath is looked upon more as a decoration than a charm. If the decoration were merely trivial, and so used by the effeminate youth of the day, then it was to be condemned and put down by law. On the other hand, as a reward for valour, it was a thing to be highly prized, although it might be composed merely of leaves and grass. Here is an example of "a simple centurion" who was rewarded for valour in the field with a grass garland and allowed privileges afterwards such as had never before been granted:

"This Centurion having the conduct of the foremost band of a regiment of soldiers under Colonel Catulus, on finding all retreat for his legion cut off by the enemy and perceiving his captain or Colonel Catulus aforesaid timorous and doubtful to break through the enemy's camp, put on a resolute mind, slew his own Colonel, exhorted the companies to quit themselves like men and follow his ensign. So he defeated his enemies and delivered his own legion. I read moreover in the Chronicles that the same Centurion had also the honour done him, that being clad in a long robe of embroidered purple, and assisted by both the Consuls for the time being, he was allowed to sacrifice to the gods with a noise of fifes and hautboys sounding hard by the hearth or altar fire." [60]

The chaplets worn at banquets were supposed to refresh the spirits, stimulate the appetite and incite those present to drink liberally and make merry. But there was a danger that the odour of the flowers might penetrate to the brain before one was aware. Pliny illustrates his point with an anecdote of Antony and Cleopatra.

"This reminds me of the device of Queen Cleopatra, full of fine wit and as wicked and mischievous withall, at the time when Antony prepared the expedition of Actium against Augustus. He stood in such doubt and jealousy of the said Queen, for all the fair show that she made of gratifying him and doing him all pleasure, that he would neither eat nor drink at her table without a taster. Cleopatra, seeing how timorous he was and minding yet to make good sport and game at his needless fear and foolish curiosity, caused a Chaplet to be made for M. Antonius, having previously dipped all the tips and edges of the flowers that went to it in a strong and rank poison. Being thus prepared she set it on the head of the said Antony. Now,

when they had sitten at meat a good while and drunk themselves merry, the Queen began to make a motion and challenge to Antony each of them to drink their Chaplets, and began unto him in a cup of wine seasoned and spiced (as it were) with those flowers which she wore herself. Oh, the shrewd and unhappy wit of a woman when she is so disposed! Who would ever have misdoubted any danger of hidden mischief herein? Well, M. Antony yielded to pledge her. Off goes his own Garland and with the flowers minced small, dresses his own cup. Now when he was about to set it to his lips Cleopatra put her hand between and stayed him from drinking, and withall uttered these words: 'My dear heart and best beloved Antony, now see what she is whom thou dreadest so much that for thy security there must wait at thy cup and trencher extraordinary tasters. A strange and new fashion truly, and a curiosity more nice than needful! Lo, would I have to seek for means and opportunities to compass thy death if I could find it in my heart to live without thee?' Which said, she called for a prisoner immediately out of Gaol whom she caused to drink off the wine which Antony had prepared for himself. No sooner was the goblet from his lips than the poor wretch died instantly on the spot." [61]

Amongst the fruits one of the most important was the fig, a very valuable food used by all classes. The best and rarer kinds were packed in boxes and cases; but in regions where they grew most plentifully they were put up in great vessels, called Orcae, or in barrels and pipes, and eaten by the inhabitants "dry, that they serve both for bread and meat". Cato, who took a special interest in this produce, gave orders that his labourers, when the fruit was ripe, should employ them to the full, so that it became a custom to eat fresh figs with salt and powdered meats instead of cheese. Cato also used this fruit as a very striking proof of the nearness and danger of Carthage to Rome, urging upon the Senate the necessity to destroy the city if they were to enjoy any degree of security in the future.

"The mention of the African fig puts me in mind of that notable occasion which, by means of that fruit, Cato took to root out the Carthaginians and rase their city. He was a man with a deadly hatred to that city and never ceased to importune the Senators of

Rome, and to cry in their ears, that they should resolve to destroy Carthage. One day he brought into the Senate house an early or hasty fig which came out of that country and showed it before all the Lords of the Senate. 'I would demand of you', quoth he, 'how long ago is it that this fig was gathered from the tree?' And when none of them could deny that it was fresh and new gotten, 'Lo, my masters all,' quoth he, 'it is not yet full three days past since this fig was gathered at Carthage. See how near to the walls of our city we have a mortal enemy.' Upon this remonstrance they concluded to begin the third and last Punic War, in which Carthage was utterly subverted and overthrown. However, Cato did not survive the rasing and sacking of Carthage, for he died the year immediately following this resolution. But what shall we say of this man? Was it his provident care and promptitude of spirit, or the occasions presented by the sudden object of the fig? Was the forward expedition of the Senate or the vehement earnestness of Cato more effectual to this enterprise? The most wonderful thing in my opinion is that so great a signory and state as Carthage, which had contended for the Empire of the world for the space of a hundred and twenty years, should thus be ruined and brought to nought by occasion of one fig. See how Cato by the means of one poor fig prevailed to bring and present the forces of Rome to the very walls of Carthage." [62]

CHAPTER X

Of Many Inventions

To know who first thought of a thing, or made it, has always interested people. Some inventions have been attributed to mythological personages, and there is reason to believe that some of these mythological personages to whom inventions were in the past attributed, did actually live as supermen or superwomen and were made gods and goddesses afterwards as a reward for their services to mankind. We have the authority of St. Augustine that an Egyptian priest told Alexander the Great that Zeus, Hera and the rest had lived on the earth as human beings. At any rate Pliny tells us that "Prince Bacchus brought up buying and selling; he also devised the diadem, that royal ensign and ornament". Here is an unexpected record differing in character from the usual associations of revelry and strong drink. Dame Ceres, too, was the first cultivator of corn, men previously having lived on the fruit of the oak. She taught them to grind corn, to knead dough and make bread in Greece and Italy; for which reason, we are told, she was reputed a goddess. Mercury, again, was credited with the invention of letters, although a rival claim was made for the introduction of the alphabet into Italy by the Pelasgians.

We are on more certain ground with regard to the so-called invention of astronomy. Pliny tells us that observations of the stars were inscribed on Babylonian bricks and tiles 1,720 years before him. From this he passes to Babylonian bricks and tiles for building, and our information is to the effect that men dwelt in holes and caves underground before they ever conceived the pattern of the first houses from observing the nests of swallows and martins. Cecrops founded the first

town, and his name was given to the castle, or citadel, in Athens. But there were rival claims, some saying that Argos was the earlier, while the Egyptians affirmed that their Diospolis was the earliest of all.

To the Romans certain names must have been as familiar in Pliny's day as those of Watt, Stevenson, Edison and Marconi in our own. We gain a glimpse of a world in which the arts were well represented. Carpentry included lathe-work in wood and ivory; also fret-work and in-laying. Bronze hinges, nails, set-squares, chisels, saws and hammers were in common use. Baths were equipped with metal pipes and fittings. Instead of soap and a scrubbing brush, the strigil, or metal flesh-scraper, was used, mercifully supplemented with an emollient oil suitable for allaying any subsequent irritation. Door knockers, lamps and candelabra, brooches, buckles, safety pins, razors, nail files, mirrors, alabaster vases for ointments, ivory combs, bracelets and amulet cases were all evidences of a luxurious state of society. The Romans did not cut their hair in the early days. The barber was a comparatively late institution. Actually, the Younger Africanus was said to have been the first to be shaved every day. How the razors to be seen in museum cases ever managed to cut or failed to gash is a mystery. The Emperor Augustus, it appears, was notoriously careless as to his personal appearance.

The art of weaving is attributed to the Egyptians; the dyeing of wool to the Lydians. Arachne was the lady who first spun flax thread, and doubtless it was she who lent her name to the spider. Bœthius invented the art of sewing and was the first of the tailors and shoemakers.

Sheep were obviously designed for the usefulness of their wool, and they introduce us to a dissertation on wool and clothes, tapestry and carpets. Sometimes the wool was "driven into a felt without spinning or weaving to make garments", and the refuse taken out of the scourer's vat was used to stuff mattresses. Soldiers in the camp made shift with hairy rugs. Mantles, heavily lined, were brought into use in the time of Pliny's father. "At the present time", he says, "the

studded cassocks that Senators and noblemen of Rome wear, are woven after the manner of deep frieze rugs."

When a woman was married at Rome a distaff was carried in the procession, dressed with combed wool; "also a spindle with yarn upon it, as symbols of the domestic arts." The richest wear of all was "the waved water chamelot", which suggests that the "watered silk", beloved of cardinals, was an old invention. Embroidery also was common—"flower-work, resembling poppies". This was said to be a Phrygian invention. King Attalus devised cloth of gold, and at Alexandria different colours in twisted thread were woven into a cloth of tissue. France brought in square or lozenge damask work. The skin of hedgehogs was used to dress woollen cloth, an anticipation of the teasel, or carding thistle. The custom of dyeing the sheep's fleeces upon their backs, while they were still alive, with scarlet and violet was resented by Pliny as an example of riotous wantonness and superfluity—"to make wool grow of a strange colour and so pervert the work of Nature."

The Dactyli Idæi, on the authority of Hesiod, discovered the iron and steel mines in Crete; and Cadmus, the Phœnician, worked the gold mines near Mount Pangaus. The Cyclopes were the first smiths; Daedalus was the first carpenter, and brought in the saw, axe and hatchet, the plumb line, the auger and wimble, the strong glue, also the fish glue and the whetstone. The lathe, rule and square, the level and the key were devised by Theodorus Samius; while Prometheus did not, it seems, himself discover the way to strike fire out of the flint, but was the first to preserve it in a stalk of Ferula which "makes the best matches to keep fire". The Phrygians invented the wagon and the chariot with four wheels.

The history of the art of war is given in some detail. It was said that the first battle was fought between the Africans and Egyptians with bastons, clubs and coulstaves. The bow and arrow were derived from the Scythians and Persians; and the javelin had a leather thong tied to its middle to assist in throwing, in the manner still used by the Central Australian

aborigines. The "Tortoise" was a military machine moved on wheels, and roofed with raw hides to prevent burning, used in besieging cities. The "Battering Ram" and the "Trojan Horse" were more mobile inventions, comparable with the modern Tank—distant cousins, centuries removed.

"Shields, bucklers and targets were devised by Praetus and Anisius when they warred against each other. Midias made the first cuirass or coat of mail,[1] and the Lacedaemonians the mourain (helmet), the sword and the spear. The Carians devised the greaves, the crests and pennaches upon helmets. Scythes, the son of Jupiter, devised bows and arrows, although some say that Perses invented arrows. The Ætolians invented the lance and the pike, and Ætolus the dart with the loop or thong. As for the light javelins and the Partisans Tyrrhenus brought them first into use, and Penthesilea, the Amazon-queen, the gleive, bill, battle axe and halbert. Piseus found out the boarspear and chasing staff. Among engines of artillery the Cretans invented the Scorpion, or cross bow; the Syrians, the Catapult; the Phœnicians, the balista, or brake, and the sling. Piseus the Tyrrhenian brought up the use of the brazen trumpet, and Clazomnius of the pavois, mantilets, target-roofs for the assault of cities. The engine to batter walls (called sometimes the horse, and now is named the ram) was the device of Epeus at Troy. The Thessalians, called Centaurs, inhabiting the parts near Mount Pelius, were the first that fought on horseback. The Phrygians devised first to drive a chariot with two horses, the Erichthonians, with four. Palamedes during the Trojan War invented the manner of setting an army in battle array; also the giving of signal, the privy watch-word, the *corps de guard*, the watch and ward. In the time of the same war Simon devised the sentinels and watch-towers, as also the espiall. Lycanor was the first maker of truce, Theseus of leagues and alliances." [63]

Iron was a metal which was regarded with deep suspicion because of the murderous possibilities connected with it.

[1] It may be of interest to quote Herodotus' description of the Persian uniform in speaking of the army of Xerxes. "They wore on their heads the soft hat called the tiara, and about their bodies tunics with sleeves of diverse colours, having iron scales upon them like the scales of a fish. Their legs were protected by trousers; and they bore wicker shields for bucklers; their quivers hanging at their backs, and their arms being a short spear, a bow of uncommon size, and arrows of reed. They had likewise daggers suspended from their girdles along their right thighs."

The "flying iron" (the barbed arrow that flieth by day) is condemned in no measured terms as a barbarous invention unworthy of civilised peoples. Civilisation has advanced since then! But Holland makes a marginal note in the following terms: "O Pliny, what wouldst thou say if thou didst see and hear the Pistols, Muskets, Culverines and Cannons in these days?" This, mark you, was in 1601. What would he say to-day?

"It remains to discourse of the mines of iron, a metal which we may well say is both the best and the worst implement now used in the world. For with the help of iron we break up and ear the ground we plant and plot our groves, we set out hortyards and range our fruitful trees in rows: we prune our Vines, and by cutting off the superfluous branches and dead wood we make them look fresh and young again every year. By means of iron and steel we build houses, hew quarries and cut in stone; in one word, we use it for all other necessary uses of this life.

"On the other hand, the same iron serves for wars, murders and robberies, not only hand to hand, but also to reach and kill afar off with darts and shot, at one time discharged out of engines, another time launched and flung by force of the arm; yea, and sometimes let fly with wings, which I take to be wickedest invention that was ever devised by the head of man; for in order that death may speed away the faster to a man and surprise him more suddenly, we make it fly like a bird in the air and to the arrow headed at one end with deadly iron we set feathers at the other. From which it is evident that the mischief proceeding from iron is not to be imputed to its nature but to the unhappy wit of man.

"We have already had good proof that iron can be employed without hurt or harm to mankind. In the capitulations of peace which Porsena, King of the Tuscans, tendered to the Roman people after the expulsion of the kings I see this express article that they should not use iron except only for the tillage of the ground. And our oldest Chronicles have recorded that it was not thought safe to permit writing and engraving letters with a style of iron. Indeed in the third Consulship of Pompey the Great, because of a tumult raised in the city of Rome for the murder of P. Clodius, an edict was published in this form: *Ne ullum telum in urbe esset*, i.e. That no man throughout all Rome should be seen to wear a weapon." [64]

There is a hint, too, of prohibiting the use of the stylus as a writing implement, on the ground that it could be used as a dangerous stabbing weapon. We find a certain justification in the fact that the "stiletto" (a word of direct derivation) was used with deadly effect during the period of the Renaissance.

Iron was known to perish with rust. A paint of plaster and tar mixed with ceruse, a white material, was used to preserve it. Also a religious ceremony to "hallow" iron was also believed to be efficacious. At least one example is recorded of its success—in the iron chain with which Alexander the Great strengthened the bridge over the Euphrates at Zeugma, the first instance known of a suspension bridge.

The evolution of musical instruments began with Amphion. Pan invented the flute and the single pipe, or recorder. Amphion taught the Lydian measures and disputed with Orpheus the claim to have played first on the Citterne or Lute. The instrument originally had only one string, for we learn that more and more strings were added afterwards until finally it had nine in all.

Greece was the great land of games.[1] Lycaon first set out the public contests for the proving of masteries and feats of strength and activity in Arcadia. Hercules instituted the exercise of wrestlers and boxers; and the first champions were crowned in his honour at Olympia.[2] Pyrrhus was the first player at tennis—a game with a long history. And in the museum at Athens reliefs are shown of figures playing a game curiously like hockey.

Pliny takes us back to the earliest days of navigation:

[1] The Lydians, according to Herodotus, were the great games-players of antiquity and passed on these pastimes to the Greeks. Dice, huckle-bones and playing with the ball are attributed to them. Homer, however, mentions the ball, a plaything which was known in ancient Egypt. Herodotus says that the Lydians endured the famine in their country by engaging in games on alternate days so that they could forget the pangs of hunger during these intervals. This method, he adds, carried them over a period of eighteen years; a severe test for the efficacy of the remedy.

[2] Herodotus tells us that ambassadors from Greece arriving in Egypt boasted that their arrangements for the conduct of the Olympic games were the best and fairest that could be devised. This was indeed a proud boast because the Egyptians had the reputation of being the wisest and most capable of all organisers.

"Danaus was the first that sailed with a ship and so he passed the seas from Egypt to Greece; for before that time they used only troughs or flat planks, devised by King Erythra to cross from one Island to another in the Red Sea. But we meet with some writers who affirm that the Trojans and Mysians were the first sailors and devised navigation before them in the Hellespont when they set out a voyage against the Thracians. And even at this day in the British ocean there are made certain wicker boats of twigs covered with leather and stitched round about. On the Nile they are made of paper, cane-reed and rushes.

"Philostephanus witnesses that Jason first used the long ship or galley; and the Erythræans are said to have made the Bireme or galley with two banks of oars. Thucydides writes that Aminocles the Corinthian built the first Trireme with three rows of oars to a side. Aristotle says that the Carthaginians were the first that set to sea the Quadrireme with four ranks of oars to a side, and Nesichthon the Salaminian set afloat the first Quinquereme with five course of oars on either side. Zenagoras of Syracuse brought up those of six, and so from it to those of ten. It is said that Alexander the Great built galleys for 12 banks to a side: Ptolemy rose to 15; Demetrius to 30; Ptolemy Philadelphus to 40, and Ptolemy Philopater to 50.

"As for ships of burden and merchandise as hoyes, etc., Hippus Tyrius was the inventor. The Cyrenians made frigates; the Phœnicians the bark; the Rhodians, the pinnace and brigantine; and last of all the Cyprians made the hulk and great carrack (galleon). The Phœnicians were the first that in sailing observed the course of the stars. The vessels for transporting of horses were invented by the Samians or by Pericles the Athenian. The Thasii had the honour for framing the long ships covered with hatch; for before that they fought only from out of the hind deck in the poop and the forecastle in the prow. Then came Piseus and armed the stem and beak-head of the ship with sharp tines and pikes of brass. Eupalamus devised the anchor; and finally Typhis the help of the helm for the pilot to steer and rule the ship." [65]

During the struggle for naval supremacy in the Mediterranean Rome held a great advantage over her rivals in the woods and forests of Italy, an advantage enjoyed by England in later centuries. One instance was a fir tree which provided a mast

for the huge ship in which Caligula brought the Obelisk from Egypt—"there was never known to float upon the sea a more wonderful ship than it was". The mast was four fathoms round. The kings of Egypt and Syria had to use cedar as the best equivalent. An exceptionally large cedar tree which grew in Cyprus was cut down to make a mast for the galley of King Demetrius which had eleven banks of oars on each side. This mast was 130 feet high and three fathoms thick.

The brazen beaks, devised for ramming, on the vanquished ships were preserved as trophies, and gave their name to the *rostra* from which the orators harangued the people. But the public Rostra at Rome had another use as a mark in determining the hour of noon. The last hour of the day was proclaimed when the sun had gone down from the Mœnian column to the prison. Sundials were introduced later.[1] The first sundial was a column erected near the Rostra during the first Punic war, and lines were traced on the pavement to mark the position of the shadow. A ball later on was placed on the top of the gnomon as an improvement in the matter of accuracy, because the shadow of the style was apt to become blurred owing to the penumbra. To avoid the difficulty of telling the time in cloudy weather Scipio Nasica invented the *clepsydra*, or water-clock.

Amongst the uses to which Nature's gifts were applied the following may be quoted. Trees lent timber for carpentry, reeds were used for arrows and musical instruments, the papyrus for paper, corn for bread-making, vines for the fermented juice of the grape; and numerous other examples are given which serve to make up a somewhat rambling yet entertaining catalogue of necessities.

Clothing was one of the foremost considerations. Leather, wool, and silk belonged to the animal and insect creation; linen and cotton were amongst the most important products of plants. Holland cloths and cambric were in great request; the Roman woman of quality, we are told, could think of no

[1] Against this Herodotus says that the sun-dial and the gnomon with the division of the day into twelve parts were received by the Greeks from the Babylonians.

richer apparel than fine linen. Most of the spinning and weaving was done in caves and vaults because in these places the air was damp. In Spain the finest lawn was manufactured, and its singular brightness was attributed to the qaulity of the water of a brook passing under Tarraco. Pliny had a first-hand knowledge of Spanish industries from his experiences as governor in that province. The flax of Zoela was held in high repute for hunters' nets. These were made so strong that they could hold the wild boar and even turn the edge of a sword. He had himself seen a net so fine that it would pass, cords and all, through the ring of a man's finger. A man could carry nets sufficient to compass a whole forest and each of the threads that went to the making of the meshes was "twisted 150 double".[1]

Cotton grew in the higher parts of Egypt. The plant is described as small, and bearing a fruit resembling a filbert, out of the husk of which a cotton breaks forth like down, very easy to spin; and no flax in the world was ever comparable with it for whiteness. "Of this cotton the Egyptian priests used to wear their fine surplices, and they took a singular delight therein". Certain specimens that have survived show an almost incredible fineness.

It is surprising to find asbestos cloth mentioned. The material was supposed to grow very much in the same way as flax grew, only more slowly.

"This in Italy they call Quick-lime and I myself have seen table-cloths, towels and napkins thereof which, being taken foul from the board at a great feast, have been cast into the fire, and there they burned before our face upon the hearth: by which means they became better scoured and looked fairer and brighter a hundred times than if they had been rinsed and washed in water; and yet no part of their substance, but only the filth, was burnt away. At the royal obsequies and funerals of kings the manner was to wind and

[1] Mosquito nets were an old institution in Egypt. Herodotus tells us that they had to use a contrivance against the gnats that came from the marshes and that the nets they used in the daytime to catch fish came in useful to sleep under during the night. The gnats, he says, will bite through a covering but will not attempt to pass through the net.

lap the corpse within a sheet of this cloth in order to separate the cinders coming from the body from other ashes of the sweet wood that was burnt. This manner of Line grows in the deserts of India where no rain falls, where the country is all parched and burnt with the Sun, among the fell dragons and hideous serpents. Thus it is inured to live burning, which is the reason that ever after it will abide the fire. It is rare to be found and as hard to be woven, so short and small it is. It is reddish in colour, yet by the fire it gets a shining gloss and bright hue. Those that find it esteem it to be as precious as the best Oriental pearls. In Greek they call this Line Asbestinium according to the property that it has not to consume with burning." [66]

Rich dyes were employed for linen and napery as well as for woollen cloth. Alexander the Great "painted" the sails and streamers of his fleet so that the people on the banks of the Indus were astonished at the sight of them waving gaily in the breeze. The sails of Antony's ship, when he came to Actium with Cleopatra, were dyed purple, and a red purple banner flew at his mast-head.

The amphitheatre at Rome was decorated by Nero with fine curtains drawn upon cords and ropes, dyed as blue as the sky and beset with stars, while the ground underfoot was red. And yet " for all these paintings and rich dyes, when all is said and done, the white linen held its own still and was highly esteemed above all colours".

Carpentry was carried to a surprisingly high pitch of skill. We read of the delight that a joiner feels to see the fine shavings wind in patterns like the tendrils of a vine as his plane runs smoothly over the panels. The right kind of glue was essential in the art of veneering and marquetry, as in all work where a joint had to resist any considerable strain. The carpenters, too, were expert judges of the grain of the wood they were using. They liked the thready grain which branched and curled as if it shed tears trickling down the wood. Quite a mania existed for tables made from the citron trees near Mount Atlas; enormous sums were given for choice pieces by collectors. Wives, when complaints were made about the high prices of

the pearls they wore, taunted their husbands with the extravagant sums they paid for the citron tables over which they liked to drink their wine.

"There is at this day to be seen a board of Citron wood that once belonged to M. Tullius Cicero, and it cost him ten thousand Sesterces: a strange matter considerng he was no rich man. Not long ago one chanced to be burnt (it came with other household stuff from the cottages in Mauritania), which cost 140,000 Sesterces: a good round sum of money and the price of a fair lordship, if a man would purchase lands for as much. But the fairest and largest table of Citron wood that has been seen to this day, belonged to King Ptolomy of Mauritania, which was made of two half circles joined together so artificially that for the closeness of the joint it might have been of one piece. The diameter was four foot and a half and it was three inches thick.

"The principal merit of these tables is to be crisped in the length of the vein, or beset here and there with winding spots. In the former the wood curls in and out along the grain and these are called Tiger tables. In the other there are sundry tufts, as it were enfolded and enwrapped round, and these they call Panther tables. Again there are some, of which the work in wainscot resembles the waves of the sea; and they are more thought of if they look like the eyes appearing in Peacocks' tails. But whatever the work and the grain of the wood, the colour is everything. Here at Rome we set most store on a colour like mead, or honied wine, shining and glittering in the veins of the wood. Some take a great pleasure in those faults which are incident to trees; to wit, the simple, plain and bare wood without any branched or curled grains at all, without a lustre and without marks, except at the most, resembling the leaves of a Plane tree. To season the wood of this Citron tree the Barbarians bury the green boards or planks in the ground and besmear them all over with wax. But the carpenters put them for seven days within heaps of corn and it is incredible how much of the weight the wood loses by this means. To maintain these tables and to cause them to shine bright, the best way is to rub them with a dry hand, especially just after bathing. Nor do they take any harm or stain if wine is spilt on them, so that it would seem they were naturally made for serving wine." [67]

Box wood was much sought after for its "crisped and

damask wise" grain, its hardness and pale golden colour. Beech had a grain "running two contrary ways like a comb". It was a wood much used for drinking vessels, and it is recorded that Manius Curius reserved for himself out of a large quantity of booty only one "cruet, or little ewer, of beech wood" with which he might sacrifice to the gods. Later the mazer bowls, made of maple, became the rage.

The branches of the silver birch were used for making panniers and baskets. Better known to history were the disciplinary measures taken by "those fine small branches of twigs so terrible to offenders". The magistrates executed justice with birch rods, a tradition worthily upheld by schoolmasters.

Sweet-scented trees came from the East and were mostly associated with religious worship. Frankincense and myrrh were the chief products of Arabia Felix, the "Happy and Blest".[1] A strict ritual was observed in pruning the incense trees and gathering the harvest. When the frankincense was being dressed for sale the workshops were guarded with a care reminiscent of Kimberley and diamonds. A seal was placed on the workmen's aprons, masks were placed on their heads, and they were stripped naked before they were allowed to quit work, so precious was the commodity. Alexander as a boy was once reproved by Aristotle for his extravagance in loading the altars of the gods too liberally with frankincense. He was told by his mentor that it would be time for him to be so lavish when he had conquered the countries that produced it. Alexander remembered this admonition when he invaded Arabia and sent his old tutor a whole shipload with instructions that he could now worship the gods as liberally as he pleased.

Cinnamon and cassia, on the authority of Herodotus, were found in birds' nests, principally in those of the phœnix, which were always built in the most difficult places—very likely a

[1] The Arabian spices had the reputation of being closely guarded. Herodotus tells us that the trees which bore the frankincense were protected by small winged serpents, of varied colours, which hung about the trees in vast numbers. Other winged animals, resembling bats, which screeched horribly and were extremely savage, guarded the cassia trees so that the Arabs in collecting it were compelled to cover themselves with skins, leaving holes only for the eyes.

story invented to justify the high prices asked. The free use of unguents from scented plants was first attributed to the Persians who soaked themselves with different kinds of scent. A chest, filled with perfumes belonging to King Darius, fell into the hands of Alexander, and the use of scents soon spread to Italy. Nero sprinkled the soles of his feet and Caligula used a kind of bath salts. The story is told of a certain L. Plotinus who, when hiding from pursuit, was betrayed by the scent of his unguents so that his pursuers got wind of him. Any number of different scents were in use—made from the iris, rose, saffron, marjoram amd quince blossom, narcissus, myrtle, balsam and cinnamon, the unguents being kept in vases or boxes of alabaster or lead.

What does mankind not owe to paper? This question is asked by Pliny. "We must not forget the plant Papyrus", he says, "considering that all the civility of this life of ours, the memorial and immortality also of men after death, consists especially in the paper which is made from it." The papyrus served many other uses than literature. The ark in which Moses was discovered by Pharoah's daughter was made of this "bulrush", coated with pitch. It was used for sails, mats, clothes and ropes. Amongst the Moors cottages were thatched with it; and it was also chewed, the juice alone being swallowed. A point to be remembered is that the papyrus has ceased to grow in Egypt ever since the country was drained. The question put by Job—"Can the rush grow without mire? Can the flag grow without water?"—has been answered in the negative.

Paper was made by splitting the pith into very thin leaves, keeping them as broad as possible. The broadest from the centre were called Hieratica and were kept for the sacred books. Nine kinds of paper in all were made, the inferior quality, called Emporetica, being used for wrapping up parcels. For writing purposes there were the Augustan, the Claudian (the finest quality of all), and the Livian for ordinary use.

Here is a brief history of literary materials:

"M. Varro writes that the first invention of making paper was devised upon the conquest of Egypt, achieved by Alexander the Great, when he founded the City Alexandria; but men used first to write on Date tree leaves and afterwards on the rinds and barks of certain trees. Then in process of time they began to register public records on rolls and sheets of lead; and soon after private persons set down their private affairs in linen books, or else on tables covered with wax. For we read in Homer that before the war of Troy there was a use of writing tables, and at the time when he wrote Egypt was not all continent and firm land as it is now.

"Afterwards, as Varro has written, when from an envious strife and emulation arising between one of the Kings Ptolemy and Eumenes King of Pergamus about the erecting of their great Libraries, Ptolemy suppressed and kept in all the paper made in Egypt, parchment of skins was then devised by the said Eumenes to be wrought at Pergamus. And finally the use was commonly taken up of both (to wit, Paper and Parchment) which continues the perpetuity and everlasting remembrance of men and their affairs." [68]

Reeds were used for arrows and musical instruments. The nations of the East (called "Easterlings") were the first archers, and barbed their arrow heads like fish hooks to prevent them being drawn easily out of the body. They could shoot so fast that a cloud of arrows seemed to shadow the sun. The more peaceful employment of reeds was for flutes and pipes. Great care was taken in cutting them at the right time, and in seeing that they were well seasoned; also in selecting the most suitable parts for the different instruments. The joint next the root was most suitable for the "Base pipe" that was fitted for the left hand: for the Treble of the right hand the knots nearest the top of the reed were the best. The hautboys which the Tuscans played at their sacrifices were made of box-wood. Other instruments were "the pipes used in plays for pleasure, made of the Lotus, of asses' shank bones and of silver".

Drinking and smoking were both considered in the light of inventions. Wine was recognised to be both a blessing and a danger. It was a saying that the two liquids most grateful to the human body were wine within and oil without, it being generally admitted that wine assisted human strength, the

blood and the complexion. Used in moderation it was good for the sinews but was otherwise injurious. People who wished to lose weight were advised not to drink wine at meals; and Hesiod strongly recommended drinking undiluted wine for twenty days immediately before the rising of the Dog-star and for as many days after. The curious fact was observed that strong wine impeded the growth of apes and other quadrupeds, thus confirming the effect of gin on jockeys. The opinion also seemed to be unanimous that wine was better suited to males than females, to aged persons than to youths, to youths than children, and to persons inured to its effects than to those not drilled to the habit. Winter was held to be a better drinking season than summer.

It seems that wine had no great reputation at Rome till about 600 years after the foundation of the city. Romulus used milk when he sacrificed to the Gods, and Numa forbade the sprinkling of the funeral fire with wine because of its scarcity. This may also have been the reason for the prejudice which existed against women drinking.

"In ancient times women at Rome were not permitted to drink any wine. We read in the Chronicles that Egnatius Mecennius killed his own wife with a cudgel because he discovered her drinking wine out of a tun; and yet he was acquitted by Romulus of the murder. Fabius Pictor in his Annals reports that a certain Roman dame, a woman of good worship, was famished and pined to death by her own kinsfolk for opening a cupboard in which the keys of the wine cellar lay. And Cato records that the custom arose that kinsfolk should kiss women when they met them in order to know by their breath whethers they smelled of Temetum (for so they termed Wine in those days, and drunkenness was called in Latin, Temulentia). Cn. Domitius (a judge in Rome) in a similar case pronounced sentence against a woman defendant in this form—'That it seemed she had drunk more Wine without her husband's knowledge than was needful for the preservation of her health'—and therefore that she should lose her dowry." [69]

Cato is spoken of as very sparing of wine and a worthy example of moderation. After a victorious expedition into

Spain he declared in a solemn speech, "No other wine have I drunk since I went than the very mariners have". "How unlike the men of these days", exclaims Pliny in disgust at their meanness, "who sitting at the table have their cup of strong wine by themselves and give other small wines to their guests; or if they allow them the best at the beginning of the feast serve them with worse soon after!" Then he adds:

"When men are heavy with wine, then (I say) the secrets of the heart are opened and laid abroad. Some in the midst of their cups: disclose the provisions of their wills, even at the board as they sit; others cast out bloody and deadly speeches at random and cannot avoid blurting out words which afterwards they have to eat again with the sword's point, for thus many a man by a lavish tongue in his wine has come by his death and had his throat cut. And verily the world is now grown to this pass that whatever a man says in his cups is held for truth. As if Truth were the daughter of the Vine!

"But say they escape these dangers, they certainly speed none too well. The best of them never see the sun rising, so drowsy and sleepy are they in bed every morning. Neither do they live to be old men but die in the strength of their youth. Some of them look pale, with a pair of flabby swollen cheeks; others have bleared and sore eyes; and some shake so with their hands that they cannot hold a full cup but shed and pour it down the floor. Generally they all dream fearfully (which is the very beginning of their hell in this life) or else have restless nights. And yet our jolly drunkards give out and say that they alone enjoy this life and rob other men of it. But who does not perceive that ordinarily they lose not only the yesterday past but the morrow to come? It is a property that necessarily follows this vice that the more a man drinks, the more he may, and is always dry." [70]

There were nearly a hundred different kinds of wine, fifty described as "generous". The Falernian was the most famous, although Augustus preferred the Setmian, as causing no indigestion or flatulence. Some wines received a curious rough flavour from the smoke of the blacksmith's forge, and for these Tiberius had a partiality. Then there were the foreign wines, some of them seasoned with salt water—possibly because of their excessive sweetness; the grapes, in Greece

especially, were generally left on the vine to dry in the sun, which would give the quality of a raisin wine. The colours varied between white, brown, blood-coloured and black. Persian wines were usually prepared with myrrh.

It was a well observed fact that wines which had been carried across the seas appeared to be twice the age they would otherwise have been—a precedent for Madeira being carried round the world. In Africa, too, they neutralised acidity with gypsum and lime, a process Sir John Falstaff detected when he declared that there was "lime in the sack". In Greece they "imparted briskness" with powdered marble, salt, and resin.

The wine was kept in hooped wooden vessels and deposited in cellars. In winter when it was liable to freeze and the casks might be burst, fires were lighted to maintain an even temperature. In more temperate climates *dolia*, or oblong vessels used as vats, were buried in the earth, a custom that has been recorded in the familiar lines:

> "Oh for a draught of vintage, that hath been
> Cooled a long age in the deep-delved earth,
> Tasting of Flora and the country green,
> Dance, and Provencal song, and sunburnt mirth!
> Full of the true, and blushful Hippocrene."

Then there were home-made liquors, made from the ripe grain of millet, from the sap of the palm, from the fig, pears and apples, from pomegranates, medlars, dried mulberries and pine-nuts. A beverage from wormwood reminds us of the flavouring of vermouth. Mead was also drunk.[1] Lastly, a series of wines complete the list in which the radish, asparagus, parsley-seed, catmint and horehound figure—with a little sea water added when required. There was a rose wine, beside a number of "aromatic" drinks, presumably non-alcoholic, concocted from various flavourings used in confectionery. Amongst them a pepper beverage which may have approximated to our Ginger Ale.

[1] Pliny mentions that a wine was made out of the Lotus fruit resembling mead, probably very heady. It would not keep longer than ten days. It is thought that this was the wine which proved such a temptation to the sailors of Ulysses.

Did the Romans smoke as well as drink? Whether they smoked for pleasure is doubtful. That they inhaled fumes to relieve such discomforts as asthma is certain. The root of the coltsfoot (*Tussilago farfara*, from *tussis*, a cough), was burnt upon cypress wood and the smoke inhaled through a "pipe or tunnel" into the mouth, a remedy said to be "singular for an old cough". Sandarach, or red orpiment, was a less agreeable smoking mixture recommended medicinally. The wise advice is given that "between every pipe you must sip a pretty draught of sweet wine", an anticipation of the associations of tobacco for other than hygienic reasons.

Dame Ceres, we have seen, was said to have invented the growing of corn and the baking of bread. In the early days every Roman citizen had his bread baked at home by the womenfolk. After the Persian war professional bakers set up their establishments in Rome. A large choice of bread and cakes was then offered, such fancy varieties as Artologanus (pancake, fritter or fine cake-bread), Spensticus ("hasty" bread, made in a hurry), breads eaten with different viands (for example, an Oyster-bread, which presumably would be brown), light pastry, breakfast rolls in which the dough was mixed with milk, eggs and butter, a Parthian cake with raisins in it, and another kind to be met with at the great houses "after the manner of simnels"—that is, made with a special flour.

One is surprised to come across the invention of harvesting machines, an early example of putting the cart before the horse:

"As touching the manner of cutting down and reaping corn, there are many devices. In France, where the fields are large, they use to set a jade or an ass unto the tail of a mighty great wheelbarrow or cart made in the manner of a Van the same set with keen and trenchant teeth sticking out on both sides. This car is driven forward before the said beast (yoked behind it) upon two wheels into the standing ripe corn, contrary to the manner of other carts that are drawn after. The teeth or sharp tines fastened to the sides of the wheelbarrow or car catch hold of the corn ears and cut them off, so that they fall presently into the body of the wheelbarrow. In some

places it is the fashion to cut with a hook or scythe the straw in the middle; and between every two sheaves they sit down and then crop off the ears just at the straw. In other countries they pluck the standing corn up by the root. In doing so they are persuaded that this is a very ready way to save charges and may serve for a light tilth or turning up of the ground: but, by their leave, they rob the ground of her kind and natural moisture. The reason of this diversity is this. In countries where they thatch their houses with straw, they save it to the full length and keep the longest haulms for that purpose.

"Concerning the device of thrashing in some places they crush the corn out of the ears with heavy and rugged machines drawn over it as it lies on the barn floor. In others they set Mares to stamp and trample it under their feet and so drive it out. And there are again some who beat and flap it forth with flails or cudgels." [71]

The finest wheat was grown in Upper Egypt where the seed was laid on the slime left by the Nile and then ploughed in, the harvest being completed in May. In Babylonia the fertility of the soil was even greater. There the overflow of the Euphrates and Tigris was regulated by sluices and flood-gates. In Italy the soil needed much harder manual labour, and it was held to be no disgrace for the greatest soldiers in the land to cultivate their fields in peace time.

"What was the cause of so much plenty and abundance in those days? Truly this and nothing else than that great lords and generals of the field themselves tilled their ground with their own hands. And the Earth for her part, taking no small pleasure (as it were) to be broken up with ploughs Laureat (crowned with wreaths of laurel) and ploughmen Triumphant, strained herself to yield increase to the uttermost. It is likely also that these brave and worthy personages were as curious in sowing a ground with corn as in ordinance of a battle in array; as diligent (I say) in disposing and ordering their lands as in pitching of a field. Was not Serranus (when the honourable dignity of Consulship was presented to him with commission to conduct the Roman army) found sowing his own field and planting trees, whereupon he took that surname Serranus? As for Quintius Cincinnatus a pursuivant or messenger of the Senate brought him the letters patent of his Dictatorship when he was in proper

person ploughing a piece of ground of his own, containing four acres and no more, lying within the Vatican. And (as it is reported) he was not only bareheaded and open breasted but also all naked and full of dust. The foresaid officer or sergeant finding him in this manner: 'Do on your clothes, Sir', quote he, 'and cover your body, that I may deliver unto you the charge that I have from the Senate and people of Rome.' In those days Pursuivants and Sergeants were named Viatores, for they were often sent to fetch both Senators and captain Generals out of the fields where they were at work. But now see how the times are changed! Those that do this business in the field, what are they but bondslaves fettered, condemned malefactors manacled and, in one word, noted persons and such as are branded and marked in their visage with an hot iron? Howbeit, the Earth, whom we call our Mother, is not so deaf and senseless but she knows well enough how she is deprived of that honour which was done unto her, yea, that travail in former times of great Captains and Lord Generals." [72]

The wine-press, also, had its own evolution. Some used only a single plank for pressing the grapes. Pliny gives it as his opinion that it is better to have two planks, as long as possible. In the old days they employed ropes, leather thongs and levers, by means of which they pulled and pressed down the planks. Within the last hundred years, however, the Greek press had been invented in which the main plank of the press was forced down by a screw worked by a windlass in the form of a star.

The best way to cut hay was a difficult matter to solve. Some watered their meadows the day before they set scythe into them if there was a brook at hand. Otherwise they waited for a heavy dew. One of the chief difficulties was to keep the scythes sharp enough. The whetstones from Crete needed oil to get a fine edge—"as barbers do their razors, and gravers their fine chisels and carving irons". The mower therefore had to have a horn of oil tied fast to his shank. A whetstone, or "grindstone", was later discovered in Italy which they could use with water. These were found to be more expeditious and became generally used.

Ancient craftsmanship in metal was another fruitful field

for inventions; working in gold especially has presented many curious problems. In the ancient Etruscan jewellery, of which specimens are extant, minute granules of gold were in some manner or other soldered on to sheets of gold, often in intricate patterns outlined with gold wire. The granules are obviously too minute to be soldered separately, yet it is seen that they could be arranged in straight or curved lines with amazing exactness and apparently with ease. The women wore hairpins surmounted with round golden balls encrusted with these fine granulations. Pliny gives no clue as to the manner in which this work was executed. His description of gold soldering is inconclusive because he uses the word "Chrysocolla" to signify either borax or verdigris (acetate of copper). The discussion of the question, is however, too technical to enter into fully here; but the so-called "Green Borax" is of interest for other reasons. This was one of the vivid carbonates, or hydrocarbonates of copper, resembling in colour "the deep and full green that is in the blade of corn". Nero spread the whole floor of the Grand Circus at Rome with it when he intended to run a chariot race himself. Then he "took pleasure to drive his horses upon a ground suitable to the colour of the cloth of livery that he wore himself at that time." A curious parallel with this green ground exists in the "Green Mount" of Kublai Khan, as it was described by Marco Polo in the thirteenth century. There the whole of the mount was covered with green verdigris so that the ground, the trees and the green palace on the top presented one uniform scheme of colouring. Evidently this brilliant turquoise tone was considered supremely beautiful throughout the ancient world.

Some interesting information is given about rings. According to tradition Prometheus invented the first ring, as he had about his finger a band of iron in which was mounted a fragment of the rock Caucasus to which he was bound. Pliny dismisses the story as a fabulous tale, only to be equalled by the story that King Midas had a magic ring which he could turn round and so make himself invisible.

The Roman soldiers wore iron rings to show that they were skilful and expert in feats of arms. Tarquin seems to have been the first to present a gold medal—on the occasion when his son, not yet sixteen years of age, killed a man in battle. After that gold medals and ribands became recognised as badges of knighthood and chivalry to distinguish the wearers from other men's sons.

An odd custom prescribed that only iron rings must be worn indoors. This was the reason why even in Pliny's day the wedding ring which the bridegroom conferred on the bride was not of gold, but of iron without any stone in it.

Here is a fuller account which gives a precedent for ecclesiastical usages and also the early equivalent for carrying on the person a master key.

"It was the custom in old times to wear rings on one finger only, namely, that which is the fourth or next to the little finger, as we can see in the statues of Numa and Servius Tullius, Kings of Rome. But afterwards they began to honour the forefinger which is next the thumb with a ring, according to the manner we see in the images of the gods. In the process of time they were pleased to wear them upon the least finger of all, and it is said that in France and Britain they used them upon the middle finger. But this finger nowadays is excepted only, whereas all the rest are charged with them, yea and every joint by themselves must have some lesser rings to fit them. Some will have the little finger laden with three rings: others content themselves with one and no more upon it, with which they seal up the signet-ring itself, this last being carefully shut up safe among other rare and precious things. This might not come abroad every day, as being a jewel that deserved not to be misused by careless handling, but to be taken out of the cabinet or secret closet only when need required. So that whoever wears one ring and no more on the least finger gives the world to understand that he has a secret cabinet at home stored with some special things more costly and precious than ordinary. Now, just as some take a pride and pleasure in having heavy rings upon their fingers and to make a show how weighty they are, so others again are so fine and delicate that they think it a pain to wear more than one. You will find many who carry poison hidden within the collet under the stone, as Demos-

thenes, that renowned prince of Greek orators, did, so that their rings serve no other purpose than to carry their own death about with them." [73]

Tin was a highly serviceable metal imported from France, Spain and Britain. The ancient Britons conveyed it in "little twiggen boats covered all over with feathers"—the coracles used on the Severn and off the South-west coast of England. What may surprise many readers is that the modern process of "tinning" was well known. Here is the description:
"There is a device to tin pots, pans and other pieces of brass (or copper) so artificially with white lead or tinglass (an invention that came out of France) that a man can hardly discern them from vessels of silver: and such leaded vessels are commonly called Incoctilia—that is, inboiled or coated by immersion in molten tin". Even the experiment of putting melted tin into a sheet of paper is described, and the fact pointed out that the paper will break with the weight, but not with the "scalding heat", of the metal. That is perfectly true; it is as a matter of fact possible to fuse tin or lead in paper so long as the paper is wrapped sufficiently tightly round the metal.

A great feature was made of silver mirrors, the metal being used in its purest form. The ancients were greatly impressed by the marvel that these polished mirrors, clouded to our modern sophisticated eye, should represent so perfectly the image of people and things. It was understood that the reflection was a kind of reverberation, or driving back, of the image which itself was only the brightness and clearness of the surface receiving it; a subtle explanation which seems to suggest a materialisation of the image. Play was made with both concave and convex surfaces. Drinking cups were made with a number of facets so as to multiply the reflections; and looking-glasses in the temple at Smyrna were constructed expressly with the object of distorting and reflecting monstrous shapes, presumably not in order to amuse, as in the Fun Fairs, but to impress with a sense of the prodigious. In more secular directions drinking pots were made with curved

bellies which no doubt succeeded in promoting hilarity among the company who saw their features pleasantly caricatured.

Of dishes in pottery mention is made of the ware that came from Tralles, a city in Sclavonia. This was of such good quality that it was imported in considerable quantities.

"But of the kind wrought with the wheel the daintiest come from Erythræ. In the principal temple of that city to-day two earthen vessels are to be seen, thought worthy to be consecrated there in regard of their clean work and their thinness. A master and his prentice made them in a contest to see which of them could drive his earth thinnest.

"To let you know that vessels of earth have been in request among riotous gluttons and wasteful spend thriftslisten to what Fenestella says about the greatest and gaudiest fare at a feast served up in three platters of courses, called Tripatinum. The first was of Lampreys, the second of Pikes, the third of the fish Myxon (a mixture); from which it may appear that in those days men began at Rome to give themselves to riot and superfluity. Yet we may prefer them even before the Philosophers of Greece, for it is written that in the sale of Aristotle's goods, which his heirs made after his decease, there were sold sixty platters which ordinarily went about the house. One platter of Æsop, the player in tragedies, cost 600,000 sesterces; but this is nothing (I assure you) to that charger of Vitellius which, while he was Emperor, he had made at a cost of a million of sesterces; for it there was a furnace on purpose in a field. Alluding to this monstrous platter Mutianus in his second Consulship (when in a public speech he ripped up the whole life of Vitellius, now dead) upbraided his memory in these very terms, calling his excess that way, *Patinarum paludes*, i.e. Platters as broad as pools. [74]

CHAPTER XI

Magic and Religion

PLINY was no atheist. He believed in a power that dealt justly with evil-doers, and followed Aristotle in visualising Nature as a spirit of divine energy operating in the world—*natura naturans*, a principle of Nature creating nature. Therefore the history, which he undertook, in his estimation expressed the highest achievement open to the human understanding. Pliny's beliefs as a Stoic led him not so much to explain how creation came about as to describe the results attained. There was also the strong ethical position of Stoicism which impelled him to speak of God as a Principle, since he regarded it as an admission of man's weakness to assign to Him a form or image. He sums up his creed in these words: "Whoever He be and in what part soever resident, is all sense, all sight, all hearing, all life, all soul, all within Himself."

Thus it was only to be expected that the mass of superstition of the ancient world left him cold and often contemptuous.[1] Frail and crazy men, he urged, had always worshipped any number of gods, choosing to honour only those of whom they stood most in need. He was prepared to accept only so much as fitted in with his scientific ideas. The rest is dismissed —the crude view of a numerous family of gods and goddesses, agitated by human passions, contracting marriages, having children, being aged or young, black in complexion (an un-

[1] Plutarch shared Pliny's views on the ill-effects of superstition when he speaks of the fears of supernatural influence which constantly haunted Alexander the Great: "So miserable a thing is incredulity and contempt of divine power on the one hand, and so miserable, also, superstition on the other, which like water, where the level has been lowered, flowing in and never stopping, fills the mind with slavish fears and follies."

expected association, undoubtedly derived from African sources which left traces in Europe), winged, or lame, or hatched of eggs—"These beliefs, I say, are mere fooleries, little better than childish toys. Whereas in very truth a god unto a man is he that helps a man: and this is the true and direct pathway to everlasting glory".

Roman thought was essentially tolerant. Matters of opinion were taken at their face value and polemics rarely indulged in, extreme views being avoided so far as possible as evidences of unbalanced fanaticism. Beneath the surface of Pliny's writings is the sense of the inevitable, a philosophy which taught him to accept the world with its faults, failures and astonishing wonders without enquiring too deeply into ultimate causes. His path lay in a simple application to duty which involved a life-long devotion to the State and to learning. Yet we see a glimpse of a higher understanding when he reflects that it is good, expedient and profitable to know that the gods have a care of man's estate, and "that the vengeance and punishment of malefactors may well come late (while God is busily occupied otherwise in so huge a frame of the world) but never misses in the end". God, in the words of St. Paul, is not mocked.

False astronomical theory has been responsible for much of the magic of the ancient world. Among the Mexicans the enormous scale of human sacrifice was intended simply to supply the sun with energy sufficient to continue its duties, as if it were as necessary to stoke the sun with blood as to stoke a locomotive with coal. The primary object of wars was to obtain a sufficient number of victims.

In the Greco-Roman world the blood-lust was not carried to such an extreme pitch. The Greeks, in fact, were distinguished as a race for a comparatively harmless and poetic form of magic, since their mythology was built on essentially humane lines. Pliny says he is surprised that Homer had not more to say about magic; yet he admits that when Homer discourses of Ulysses and his adventurous travels one would think that the whole work consisted of nothing else but magic

—the transformations of Proteus, the songs of the mermaids and the famous enchantresses. "As for what he relates of Lady Circe, how she wrought her feats by conjuration only and raising up infernal spirits, surely it savours of Magic art and nothing else."

Cannibalism in connection with human sacrifices was one of the worst abuses of magic, and on this point Pliny speaks authoritatively. In the 657th year after the foundation of Rome these sacrifices were forbidden by law. In France also they were stopped by Tiberius who "put down the Druids, together with all the pack of such physicians, prophets and wizards". As to Britain there is a passage (with Philemon Holland's comments) which points to the beneficial results of the Roman culture.

"Truly in Britain at this day magic is highly honoured, where the people are so wholly devoted to it, with all reverence and religious observation of ceremonies, that a man would think the Persians first learnt all their Magic from them (as it appears by our old English Chronicles, which wrote of King Arthur, the Knights of the Round Table, and Merlin the prophet or magician). See how this Art and the practice thereof is spread over the face of the whole earth! And see how those nations [Holland instances England, Scotland and Ireland, where in old time Magic bare a great sway and witches still swarm too much] who in all other respects are far different are conformable on this one point! In which regard the benefit is inestimable, that the world has received from our Romans, for they have abolished these monstrous and abominable Arts which under the show of religion murdered men for sacrifices to please the gods; and under the colour of Physic prescribed the flesh to be eaten as most wholesome meat." [75]

Here is indicated the primary motive of cannibalism—the belief that the strength and vitality of another person, such as a stricken enemy or unfortunate victim, could be absorbed by an act of assimilation into the system.

But if cannibalism was stamped out, the revolting custom of blood-drinking remained. Miss Petowker's famous recitation was at least based on historical evidence, and the Gothic

warriors in the paradise of Odin caroused on the blood of their enemies drunk from their own skulls. Pliny gives us instances of the prevalence of the same habit. Mithridates recommended the blood of the ducks of Pontus to be drunk as an infallible antidote against poison. At Ægina the priestess, when about to prophesy the future, used to indulge in a draught of bull's blood before she descended into the cavern.[1] A different kind of story was that Drusus, a tribune of the people, drank goat's blood to produce pallor, in order to throw the suspicion of being poisoned on his rival, Q. Coepio. The worst and most disgusting example of all was the drinking of the blood of the dying gladiator in the arena.

The Black Art came from the East. Nero at one time dabbled in it, under expert and royal instruction, but met with no apparent success. As his experiments proved a failure he returned to the form of religion practised at Rome. From this it seems conclusive that the power of magic broke down utterly as soon as the belief in it vanished.

"There are many sorts of Magic, as Osthanes has set down in writing; for it works by the means of Water (hydromantia), Globes or Balls (sphaeromantia), Air (aeromantia), Stars (astrologia), Fire-lights (pyromantia), Basins (buanomantia), and Axes (axinomantia); means by which there promise the foreknowledge of things to come, also the raising up and conjuring of departed ghosts and conference with Familiars and infernal spirits.

"All of these things were found out by the Emperor Nero in our days to be no better than vanities and vain illusions, and yet he was inclined to study the Magical art as assiduously as to play upon the cythern and to hear and sing tragic songs. Nor is it to be wondered at that he was given to such strange courses, having wealth and world at will and his fortune besides accompanied with many deep corruptions of the mind. But amid those many vices to which he had sold himself he had a chief desire to command the gods (forsooth) and familiar spirits, thinking that if he could attain to that, then he had climbed to the highest point and pitch of magnanimity. There was never a man who studied harder and followed an art more earnestly than he did Magic. He had enough riches and power under

[1] Generally, however, bulls' blood was believed by the ancients to be poisonous.

his hands, his wit was quick and pregnant to apprehend and learn anything, and yet he gave it over in the end; an undoubted and peremptory argument to convince the vanity of this Art, when such an one as Nero rejected it.

"As to this Art-magic which Nero would so fain have learned, what might be the reason which he could not reach unto it? These Magicians are not without their shifts and means of evasion to save the credit of their Art; as, for instance, that ghosts and spirits will not appear nor yield any service to people who are freckled and full of pimples, and haply Nero was such an one. As for his limbs otherwise he had them all sound, and then besides he could choose at his good will and pleasure the set days and times fit for this practice. It was an easy matter, too, for him to meet with sheep coal black, and such as had not a speck of white or any other colour; and as to sacrificing men nothing gave him greater delight. Furthermore, he had about him Tyridates the King of Armenia, a great Magician, to give him instruction. This prince travelled to Rome all the way by land because he had a scruple and thought it unlawful (as all magicians do) either to spit into the sea or otherwise to discharge into it from men's bodies what might pollute and defile that Element. He instructed Nero in the principles of Magic, yea and admitted him to sacred feasts and solemn suppers to initiate him into the profession; but all to no purpose, for Nero could never receive at his hands the skill of this Science. Therefore we may be fully assured that it is a detestable and abominable Art, grounded on no certain rules, full of lies and vanities, for, to tell the truth, the certitude which it has in effecting anything proceeds rather from the devilish cast of poisoning practised therewith than from the Art itself of Magic. But why need any man listen to the lies which the Magicians in old time have sent abroad, when I myself in my youth have seen and heard Apion (that great and famous Grammarian) tell strange tales of the herb Cynocephalia, that it has a divine and heavenly virtue as a preservative against all poisons, charms and enchantments, but that whoever plucked it out of the ground could not escape instant death. The same Apion reported in my hearing that he had conjured up spirits to enquire of Homer what country he was born in, and from what parents he was descended; but he dared not say what answer was given." [76]

Ordinary superstitions played a large part in Roman life and certain ideas strange to the modern mind were prevalent.

One curious example was the custom for priests in a time of war to try to win over the gods or goddesses of besieged cities by promising them better quarters than they had enjoyed before. "For the same reason it was never divulged abroad what god was the protector and patron of Rome for fear lest some of our enemies should try to conjure him forth and deal by us as we do by them."

Exceptionally solemn superstitions were connected with the foundation of a city—a most important affair which could not be undertaken rashly without divine guidance. A grave, or tomb of some kind, was often looked upon as a palladium, or talisman, of a city—probably a relic from an era of human sacrifice. On one occasion a man's head was discovered when the Romans were digging the foundations of Jupiter's temple on the Tarpeian rock. The senate wishing to know the significance of this strange portent sent to the wise men of Tuscany to enquire what it might mean. These experts adroitly tried to turn the incident to their own advantage by means of a trick:

"Olenus Calenus (who was reputed the most famous diviner and prophet of all the Tuscans) foreseeing the great felicity it imported, intended by a subtle interrogation to translate the benefit thereof to his own native country of Tuscany. So having first described with a staff the outline of a temple on the ground before him he questioned the Roman ambassadors in this wily manner. 'Is it so, Romans, as you say? Are these your words, that there must be a temple of Jupiter here, where we have lighted on a man's head?' Unto which interrogation the Roman ambassadors, according to the instructions they have received, answered in this manner. 'No, not here in this very place, but at Rome (we say) the head was found.' Indeed, our ancient Chronicles constantly affirm that, had they not been forewarned what to say, the fortune of the Roman State and Empire had gone quite away to the Tuscans and been established among them," [77]

This device of drawing a figure on the ground with a stick was used on another occasion when a Roman senator was sent to warn an intruding king off the territory of Egypt. When

the king hesitated to give a suitable answer the Roman drew a circle round him and intimated in plain terms that he should not move out of it until he had said yes or no. The threat worked.

The ordinary spells were very varied in their operation. All the pots and pans baking in a furnace would break if certain words were uttered. The oldest form of fire insurance was to write the words *Averte Ignem* on the walls. On the authority of Homer, Ulysses staunched his wound with a charm. M. Varro reported the virtue of certain good words for the gout; and Cæsar having once had a carriage accident would never again ride in a coach without first pronouncing a charm which he used as a safeguard.

Pliny asks in despair the reason for so many of these strange customs. Why do people wish each other a Happy New Year? Why are persons with good fortunate names chosen to lead the beasts appointed for sacrifice? (Disraeli on the same principle made it a rule to avoid unlucky men.) Also, the *nil nisi bonum de mortuis* maxim was not primarily intended as an example of good manners, or courtesy to the departed, as we should take it to be; but it was regarded rather as the safest policy to adopt for fear of reprisals from the spirits of the dead.

"How is it that in mentioning those that are dead we protest that we have no wish to disquiet their ghosts or to say anything prejudicial to their good name and memorial?

"If there is nothing in words, I would fain know why we have such an opinion of odd numbers, believing that they are more effectual than the even—a matter, I may tell you, of great consequence in the critical days of fevers?

"In the gathering of our first fruits, be they Pears, Apples or Figs why do we say, 'This is old, God send us new'?

"What moves us to wish health and say 'God help, or bless, when one sneezes? Even Tiberius Cæsar, who otherwise was known for a grim sir, and the most unsociable and melancholy man in the world, required in that manner to be saluted and wished well to, whenever he sneezed, though he were mounted in his chariot. Some salute the

party ceremoniously by name and think there is a great point of religion in that." [78]

Ears tingling, when people in our absence are talking of us, was a Roman superstition. There is no mention of saying "Bo" to a goose; but if you said "Duo" to a serpent it would be still and quiet and never shoot forth its sting. Here is a curious belief we have also inherited—known to us as an "angel passing":

"See how ceremonious those persons were and what precise usages they instituted in the belief that in all our affairs and actions, and at all times, the divine power of God was present and that by these means they pacified them for all our sins and vices. It has been remarked that often the table is hushed and no word heard from one end to the other when there is an even number present. What does this silence presage? Surely that everyone is in danger of losing or impairing his credit, good name and reputation." [79]

Special precautions were taken about paring the nails on certain days. Hair should be cut only on the seventeenth or twenty-ninth day after the change of the moon. The peasant women had to be careful about spinning as they walked in the streets for fear of prejudicing the wheat harvest. Charms existed against hail-storms, burnings, scaldings and so many other things that Pliny confesses he is really abashed and ashamed to put them down in writing.

Perhaps the most interesting passage of all is a reference to the Roman ceremonies. The insistence on precise ritual is emphasised.

"If a beast is killed without a set form of prayers it is to no purpose and held unlawful. Likewise, if these invocations are omitted when a man seeks an Oracle and would be directed in the wills of gods by beasts' bowels or otherwise, the gods would be displeased. Moreover, the words used in entreating something at their hands run in one form: exorcisms to divert their ire and to turn away some imminent plagues are framed after another sort: also there are proper terms of address serving for meditation and contemplation.

"We see, too, how our highest magistrates use a preamble of certain set prayers. So strict and precise are people in this point

about divine service that for fear lest some words should be left out or pronounced out of order, a prompter is appointed purposely to read the same before the priest, out of a written book, so that he miss not a tittle. Another is also set near his elbow as a keeper to observe and mark that he fail not in any ceremony or circumstance. And a third is ordained to go before and make silence, saying to the whole assembly and congregation *Favete linguis* (i.e. spare your tongues and be silent); and then the flutes and hautboys begin to sound and play, to the end that nothing be heard to trouble his mind or interrupt him the while. Indeed there have been memorable examples of strange accidents and of cases where the unlucky fowls by their untoward noise have disturbed and done hurt, or some error has been committed in the prescribed prayer and exorcism; the result being that all of a sudden while the beast stood before the altar the lobe of the liver is found missing among the entrails, or the heart missing or doubled.

"Now if this is received as an undoubted truth, and if we admit that the gods hear some prayers or are moved by any words, then surely we may conclude affirmatively on the main question. Certainly our ancestors have always believed and delivered such principles; yea, and that which seems most incredible, that by the power of such charms and conjurations thunder and lightning have been fetched down from above.

"L. Piso reports in the first book of his Annals that Tullus Hostilius, King of Rome, was struck dead with lightning, because when he went about to call Jupiter down out of heaven by a sacrifice which King Numa was accustomed to use he had not observed exactly all the exorcisms and ceremonial words contained in those books of King Numa, but swerved somewhat from them." [80]

With regard to unlucky omens[1] one saving remark demands attention, to the effect that it was a principle of the Augurs' discipline and learning that such omens (especially in connection with the flight, singing or feeding of birds) could not touch people who declared with conviction that they paid no

[1] The basis of the reasoning about omens was that everything that happens is a sign of something that is going to happen. The art of divination had not to do with mere chance occurrences; and the reason why attention was only drawn to such birds as the eagle and the raven was that acquaintance with the other birds was too slight to warrant the foretelling of future events. Every movement, in point of fact, of living creatures on encountering people was held to be significant of something imminent. The essence of the omen lay in the observation.

attention to them and were not afraid of them. As Pliny puts it, this was "a testimony of the divine indulgence and favour of the gods in thus subjecting their secrets to our puissance". In other words, it was laid down that the efficacy of portents and signs depended on the question of how much reality people attached to them—a very comforting doctrine, he adds, with regard to human destinies.

Another aspect of Roman religion was its close association with open-air life, the recurrence of the seasons and the harvests. Great festivals celebrated the cycle of the year. The spirits of the countryside became the family deities; and Jupiter was the lord of the air in company with the gods of the Greek mythology. No oaths were taken under a roof, not even under the roof of a temple. Deep in the hearts of the Roman people religion was felt as the sense of awe inspired by a spirit-world existing in close contact with the phenomena of Nature. The trees were "the first temples of the gods". The beech was sacred to Jupiter, the laurel to Apollo, the olive to Minerva, the myrtle to Venus, the poplar to Hercules. Fauns and Nymphs held the tutelage of the woods. Paganism was the simple religion of the *pagani*, the peasant population, who cultivated the old forms of nature worship. An unsophisticated form of piety thus became habitual to the people, capable of cementing the family under the general beneficence of the fatherhood of the sky, the motherhood of the earth, the *di agrestes* and the *lares familiares*—all combining in a scheme at once romantic and intimate.

Taking a few phases of this somewhat intricate scheme we observe the elaborate symbolism which grew up around the things that grew out of the earth. The laurel, for example, illustrates many curious associations—religious, medical, military and cultural—connected with this most noble and sacred of trees.

"The Laurel betokens peace. When a branch is held among armed enemies, it is a sign of quietness and cessation from arms. Moreover, the Romans were wont to send their missive letters adorned with Laurel when they announced good news or joyful

victory. Also they garnished their lances, pikes and spears with it; and the fasces borne before grand captains and generals of the army were beautified and set out with Bay branches. With it they stick and bedeck the bosom of that most great and gracious Jupiter, as often as there is news of some late and fresh victory. And all this honour is done to the Laurel, not because it is always green, nor that it shows peace (for in both these respects the Olive is to be preferred before it) but because it is the fairest and goodliest tree that grows on the mountain Parnassus and was pleasing to Apollo. Another reason may be because it is the only plant set out of doors or brought into the house which is not blasted and smitten with lightning. It was not permitted by men in old time to pollute either Laurel or Olive in any profane use; so much so that they might not burn them on their altars when they sacrificed or offered Incense, though it were to do honour to the gods and appease their wrath and indignation. It is evident that the Bay tree leaves, by the crackling they make in the fire, seem to detest and abhor it. It cures moreover the diseases of the guts; also the lassitude and weariness of the sinews. It is reported that Tiberius used always to wear a chaplet when it thundered, for fear of being struck with lightning. Moreover, certain strange and memorable events touching the Bay tree have happened about Augustus Cæsar. For Livia Drusilla (who afterwards by marriage with the said Augustus became Empress and was honoured with the title of Augusta) when she was affianced to Cæsar chanced, as she was sitting still, to have an exceeding white Hen light into her lap (which an Eagle flying aloft let fall from on high) without any harm at all to the said pullet. Now when this lady considered well the Hen, without being astonished at so miraculous a sight, she perceived that the Hen held in her bill a Laurel branch full of Bay berries. The Wizards and Soothsayers were consulted about this wonderful occurrence and advised in the end to preserve the bird and the brood thereof; likewise to plant the branch and duly to tend and look unto it. Both these things were executed accordingly about a certain country house on the River Tiber belonging to the Cæsars near the Flaminian Way, about nine miles from Rome: which house was called, Ad Gallinas, as a man would say, the Sign of the Hens. Well, the branch mightily prospered and proved afterwards to be a grove of Laurels which all came from that first stock.

"In process of Time, Augustus, when he entered in Triumph

into Rome, carried in his hand a branch of that Bay tree, yea, and wore a chaplet upon his head of the same; and so did all the Emperors and Cæsars his successors after him. Hence arose the custom to plant again those branches of Laurel that Emperors held in their hands when they triumphed; and whole woods and groves are thus distinguished; each by their several names, and were therefore called Triumphal. And to conclude, this would be resolved and agreed upon by the way, that if a branch or slip is set, it will prosper and become a tree, although Democritus and Theophrastus make some doubt thereof." [81]

A tradition existed that certain trees had "continued time out of mind and lived infinitely". Of these immortals were a few famous Olive trees and a Myrtle that was said to guard the ghost of Scipio Africanus with the aid of a dragon living in a cave or hole underneath. Sometimes victorious generals were crowned with a chaplet of myrtle; and one particular variety was called Conjugula because of an association with wedlock. The myrtle was certainly a versatile plant or tree; for out of it were made garden arbours and from its fruit a wine, and also an oil which professed to have valuable medicinal properties. But its most striking merit was its adaptability for use as a walking stick: "if a wayfaring man that has a great journey to go on foot carry in his hand a stick or rod of the Myrtle tree, he shall never be weary, nor think his way long and tedious." An admirable idea if only it could be true.

And just as the laurel was the decorative object of veneration in the South of Europe, so in the North the mistletoe became the plant of mysticism, worshipped as a godlike thing. But it is France, not Britain, where mention is made of the ceremonies performed by the Druids. When Julius Cæsar wished to punish the inhabitants of Marseilles he ordered his soldiers to cut down a grove of Druid oaks, as the most significant means of displaying his power. So greatly did his men fear the trees that they expected their axes to glance off and wound them.

"The Druids (for thus they call their Diviners, Wise men and the state of their Clergy) esteem nothing more sacred in the world

than Mistletoe, and the tree whereupon it breeds, so it be on Oak. Now this you must take by the way: these Priests or Clergy chose such groves for their divine service as stood only upon Oaks and they solemnise no sacrifice nor perform any sacred ceremonies without branches and leaves thereof; so they may seem to be well named Dryidae in Greek, which signifies Oak-priests. Whatever they find growing on that tree over and above its own fruit, be it Mistletoe or anything else, they esteem it as a gift from the gods. And no marvel, for indeed Mistletoe is passing geason (rare) and hard to find on the Oak; but when they meet with it, they gather it very devoutly and with many ceremonies. First and foremost, they observe principally that the moon be just six days old, because she is thought then to be of great power and sufficient force and is not yet come to her half-light and the end of her first quarter. They call it in their language 'All Heal' (for they have an opinion that it cures all maladies) and when they are about to gather it they bring two milk-white young bullocks such as never yet drew in yoke at plough or wain, and whose heads were then, and not before, bound by the horn. Which done, the priest arrayed in a surplice or white vesture climbs up into the tree and with a golden hook or bill cuts it off, then they beneath receive it in a white soldier's cassock or coat of arms. Presently they fall to kill the beasts aforesaid for sacrifice, mumbling many orisons and praying devoutly that it will please God to bless this gift of his to the good and benefit of all those to whom he has vouchsafed to give it. Now this persuasion they have of Mistletoe thus gathered that what living creature soever (otherwise barren) do drink of it, will presently become fruitful; also, that it is a sovereign counter-poison or singular remedy against all vermin. So vain and superstitious are many nations in the world, and often times in such frivolous and foolish things as these." [82]

These beliefs were in accordance with the views of the Greek philosophers who held that trees had a soul or spirit and were possessed of sense and intelligence. From this angle of thought the fir became a tree of mourning, and a branch of it was set up at the doors of a house where a corpse lay. It was also a churchyard tree and was planted in the places where bodies were burnt.

The ash was the most magical tree of all. It was associated

with witchcraft, although it is not certain whether the brooms on which witches flew came from it. The shrew-ash may have had its origin from this superstition. A shrew mouse buried alive in the trunk was said to ensure a cure for rheumatism. Pliny says that the leaves were deadly to horses and mules, but harmless to animals that chewed the cud. As to snakes, they had such an aversion that if they were put within a circle of ash leaves in any place where there was a lighted fire they would throw themselves into the fire sooner than come in contact with the leaves. Their shape seems to have some strange mystical meaning.

Trees shared with birds the power of foretelling events. Many cases, we are told, were mentioned in the old chronicles of trees falling, without wind or tempest, simply as warnings. An old elm in the grove of Juno fell at Nuceria during the wars against the Cimbrians; but as it fell on the altar of Juno it rose of its own accord and soon after put forth blossoms and flourished. From that moment the success of the Roman arms revived. Recoveries of trees in similar auspicious circumstances always meant good luck. Once a plane-tree fell and its trunk was squared by a carpenter; yet it rose nevertheless and recovered its former greenness and lived.

If the habit of a tree changed from better to worse—a garden olive, for example, degenerating into the wild state, or a white vine, or white fig tree growing black fruit—that was counted an unlucky sign. Here are a few other marvels:

"A little before the civil war broke out between Julius Cæsar and Pompey the Great, an ominous sight was reported presaging no good from the territory of Cumæ, namely, that a great tree there sank down into the earth so deep that a very little of the top boughs was to be seen. Upon which the prophetical books of Sibylla were perused and it was found that this prodigy portended some great carnage of men and that the nearer this slaughter and execution should be to Rome, the greater would the bloodshed be.

"Another wonder is when trees grow in places where they were not wont to be and which are not agreeable to their natures; as on the chapters of pillars, heads of statues or on altars. About the

time of the civil war a Date tree grew out of the base or foot of a column that Cæsar Dictator caused to be erected there. Also at Rome, twice during the war against King Perseus, a Date tree was known to grow on the lantern or top of the Capitol temple (or, as some read, out of the head of Jupiter within the Capitol) thus foreshowing the victories and triumphs which afterwards ensued, to the great honour of the people of Rome. When this tree was overthrown by storms and tempests there sprang up in the same place a Fig tree at the time when Messala and Cassius, the two Censors, held the Quinquennial solemn sacrifices for the purging of the city of Rome: from which time Piso (a renowned Historiographer and writer of good credit) has noted that the Romans were given over to voluptuousness and sensuality, and that ever since all chastity and honest life have been exiled. But the greatest prodigy ever seen or heard happened in our age about the time that Nero the Emperor came to his unhappy end and fall; for in the Marrucine territory there was an Olive garden belonging to Vectius Marcellus, a right worshipful knight of Rome, which of itself bodily crossed the broad highway to a place where lay tillage or arable ground. And the corn lands by way of exchange crossed over the said causeway again and were found in lieu of the Olive plot or hortyard. But if any may be desirous to know more of these and suchlike miracles (since I love not to run on still and make no end) I refer him over to Aristander, a Greek writer, who has compiled a whole volume and stuffed it full of suchlike wonders. Let him also have recourse to C. Epidus, a countryman of ours, whose commentaries are full of such stuff: where he shall find also that trees sometimes spoke." [83]

Fig trees played a prominent part in Roman history. No less than four were conspicuous in Rome. A sacred fig tree was kept in the Forum and renewed, when it withered, by the priests. Another even more famous, named Ruminalis, was that under which Romulus and Remus were suckled by the she-wolf. A third grew before the temple of Saturn and was tended by the Vestal nuns. A fourth mysteriously appeared in the Forum, apparently in a crack of ground caused by a formidable earthquake. This was well looked after and trimmed by the populace who enjoyed, in the manner of the patriarchs, "the pleasure of the shade thereof."[1]

[1] A parallel is to be seen in South Cornwall to-day, in the tower of Manaccan Church, where a large fig tree is growing out of the wall without any roots visible.

In religious observances the highest honours were paid to corn, the sacred food and staple commodity on which man existed. Romulus instituted a fraternity of "certain Priests or Wardens over cornfields". He himself was the twelfth brother of this Order and wore a garland of ears of corn twisted and tied together with a white riband as the sacred badge of the new priesthood. King Numa, his successor, offered sacrifices of corn baked or parched, and it became an established custom that no man should "taste new corn or wine before the priests had taken a fee of the first fruits." Here we have an instance of tithes.

Thus Roman religion concerned itself with a system which endeavoured to ensure success and plenty by conciliating forces outside science and by warding off the danger of some evil principle that controlled events. It is an understood rule that men fear what they do not understand; and the feeling of dependence on agriculture as a means of subsistence dictated fitting ceremonies. Any unusual or unexpected event in the realm of nature was at once accepted as the prelude to something equally unusual in human affairs.

With regard to Pliny's attitude to the more philosophical aspect of religion we find that he recognises three ruling factors as uppermost in life—Fate, Fortune and Nature. He was too independent and self-reliant to submit to a doctrine of absolute fatalism, to believe that the issues of a man's life were determined by blind chance or sheer accident. The popular Roman worship of Fortuna was to him a form of rank superstition which could have no other effect than to undermine the basis of character. Augury was a weak substitute for personal initiative and responsibility. The great principle of the universe lay in the Epicurean doctrine of "Nature", the inexorable power deciding and determining everything, but not in herself a deity. Jupiter as a god had, in fact, distinct limitations.[1] It is pointed out that he was neces-

[1] Seneca throws additional light on the view taken by the Stoic philosophy on the question of the gods. "Nor yet did the ancient sages believe that the Jupiter we worship in the Capitol and the rest of the temples ever really hurled thunderbolts from his hand. They recognised the same Jupiter as we do, the guardian and ruler

sarily tied to an existence of which he could not rid himself, and in that matter was to be considered less fortunate than mortal men for whose benefit Nature had in all kindliness supplied the inestimable boon of sleep and death. Pliny's ideas are curiously simple, yet patently sensible. He proves to his own satisfaction that Jupiter is ruled even by the laws of mathematics and is powerless to cancel the universal principle that twice ten make twenty. "God", he says, referring to Jupiter, "is not omnipotent and cannot do all things". Nature on the other hand remains in supreme control and is an ever-present and active force. And Fortuna, the most popular Deity of Rome, was herself a delusive and helpless form of deity who in representing the action of blind chance, could never be accepted as capable of infringing or annulling the excellent power of Nature.

of the universe, its soul and breath, the maker and lord of this earthly frame of things, to whom every name of power is appropriate. If you prefer to call him fate, you will not be wrong. He it is on whom depend all things, from whom proceed all causes of causes. If you prefer to call him providence, you will still be right; for he it is by whose counsel provision is made for the world that it may pursue its orderly course and unfold the drama of its being. If you prefer to call him nature, you will make no mistake; for it is he from whom all things derive being, and by whose breath we live. If you prefer to call him the world, you will not be in error; for he is everything that you can see, he is wholly infused in all his parts, self-sustained through inherent power." There was little to rouse mankind in a conception of fate as allowing nothing to avert the happening of what was about to take place—inexorable decrees from which worshippers could not hope to be spared, with nothing to alleviate their unhappiness except the presumably vain exercise of their prayers and sacrifices.

CHAPTER XII

Gold and Silver

THE rise of Rome to immense affluence was rapid as the immediate result of gaining the command of the Mediterranean in the conflict with Carthage. Thus was paved the way to victories in the East and the flow of the countless riches of the Orient into Rome—gold, silver, pictures, statues, Corinthian brass and works of art of every description. Of all this vast accumulation of things Pliny gives us a fairly comprehensive idea. Rome grew to be congested with an excess of statues in the places of assembly, in gardens and private houses. The temples—the strongholds of the Muses—became the first museums and were hung with pictures by the finest Greek artists. It was a time when private citizens, and even slaves, quickly amassed fortunes and in the first flush of finding themselves millionaires attracted notoriety by the ostentation with which they indulged their extravagant fancies. The description of this wealth may well appear fantastic, but the facts and figures which Pliny gives are probably well within the truth. Take as an example the theatre of Scaurus, built to entertain the populace. The stage had three lofts, one above the other. The middle loft was of glass—"an excessive superfluity, never heard of before or after." The top one was entirely gilded. Supporting this stage were 360 columns of marble, 38 feet high, and between them stood 3,000 statues and brass images. The theatre was built to hold 80,000 persons "to sit well and at ease". In addition there were rich hangings made of cloth of gold and the most exquisite pictures that could be found. Also the players' costumes and armouries were so abundant that the "surplusage" was conveyed back to the country

house of Scaurus at Tusculum. There, we are told, his servants and slaves were so indignant at the vast and monotonous superfluity that they burnt the place down, and thus cost the owner an estimated damage of a hundred millions of sesterces.

Real wealth with the Romans was estimated in the metals, particularly in gold. The discussion of gold therefore occupies a considerable space in the *Natural History*, and includes such topics as the wearing of rings, gold medals and ribbons for valour, accumulations of treasure and the profuse adornment of Nero's palace[1]—all pointing to a rigid gold standard. It is a fact, too, that a well-filled treasury proved to be an enormous financial success under the Roman régime, for booty of 3,000 pounds weight of gold, brought to Rome after the defeat of Perseus, King of Macedonia, relieved the people from any subsequent necessity of paying taxes.

As to the metal itself it is pointed out that gold has no "rust or canker", even if brought into contact with salt or vinegar. Also it was highly malleable, so that it could be spun like wool and silk and woven in the manner of yarn. King Tarquin rode in triumph in a robe of wrought gold: and Pliny says that he had himself seen the Empress Agrippina sitting by the side of Claudius at a naval exhibition arrayed in a royal mantle woven with nothing except pure gold. The kings of Asia were accustomed to robes of gold thread mixed with other material for everyday use.

It may be asked where these supplies of gold came from. Pliny tells us that there were three sources: the chief of them being the sands of such rivers as the Tagus, Po, Hebrus in Thrace, Pactolus in Asia, and the Ganges in India.[2] This was

[1] According to Suetonius the "Golden House" had a colossus of Nero set in the porch, three miles of galleries, a lake, fields, pastures with wild and tame beasts, dining rooms with ivory ceilings from which flowers and perfumes could be dropped, and everywhere a profusion of gold, precious stones and mother-of-pearl. The chief dining-room had a round roof which wheeled round night and day like the heavens. Nero declared that now at last he could live like a man.

[2] Strabo says that the barbarians caught the gold carried down by the mountain torrents in perforated troughs and fleecy skins, thus accounting for the quest of the Argo. Diogenes once likened a rich man without learning to a sheep with a golden fleece.

the best gold of all, rubbed and polished in the stream of water. Pits in the ground were also dug, and mountain sides explored where the rock was exposed. The galleries often fell in and overwhelmed the miners. Nor must the ants in India which cast the gold up out of the ground, nor the Griffins who gathered it in Scythia be forgotten.[1]

The following were amongst the richest owners of the precious metal. Some of their names have become proverbial.

"Both Midas and Crœsus were possessed of infinite sums and huge masses of gold. Cyrus, too, upon his conquest of Asia, met with 34,000 pound weight of gold, besides the gold plate and vessels certain leaves of trees, a Plane and a Vine tree, both of beaten gold. In the pillage also of this victory he carried away 500,000 talents of silver and a standing cup that he took from Semiramis that weighed fifteen talents. Before this there had reigned over the Colchians Salances, who having newly broken up a piece of ground in the Samians' country is reported to have gotten out of it a great store of silver and gold, notwithstanding that the whole kingdom is renowned for the Golden Fleece there. Indeed this prince had the arched and embowed roofs of his palace made of silver and gold: the beams and pillars also sustaining the building, yea the jambs, posts, principals and standards, all of the same metal after he had vanquished Sesostres King of Egypt, so proud a prince that he was wont every year to have one or other (as the lot fell out) of those kings, who were his tributaries and did homage to him, draw in his chariot like horses, when he was disposed to ride in triumph." [84]

By way of comparison with the fabulously wealthy kings of the East, we gain a glimpse of the resources of the Roman millionaires.

"In olden time men knew no number above a hundred thousand and therefore at this day also instead of a million we multiply this number by ten and thus say in Latin *Decies centena millia*, i.e. A Hundred thousand ten times told and so forward. Usuries, interests

[1] On this question of the source of gold, Herodotus makes this statement. "The northern parts of Europe are very much richer in gold than any other region: but how it is procured I have no certain knowledge. The story runs that the one-eyed Arimaspi purloin it from the griffins; but here I am incredulous, and cannot persuade myself that there is a race of men born with one eye who in all else resemble the rest of mankind."

and coined money have been the cause of these multiplications; hence debts came to be called even to this age *Aes alienum* or 'another man's money'. From this arose the proud name of Divites, i.e. Rich, for great monied men were so called. Yet let this be known that the first man that was ever known by the surname Dives brought a shilling to ninepence in the end, proved Bankrupt and defeated his creditors. As for M. Crassus, one of that same house, he would commonly say that no man was to be counted rich and worthy of the title *Dives* unless he were able to spend in the year as much as in revenues as would maintain a legion of soldiers. And indeed his own lands were esteemed worth *Bis millies sestertium*, that is to say, 200 millions of sesterces, Roman; and setting aside Sylla, he was the richest Roman that ever was known. Yet such was his avarice that he could not content himself with that wealthy estate but must needs undertake an expedition against the Parthians upon a hungry desire to have all their gold.

"We have known many after him, and those of base conditions, no better than slaves newly enfranchised, to have grown to greater wealth: Pallas, Callistus, and Narcissus, late bondslaves to Claudius Cæsar. Beside them was C. Caecilius Claudius who signified by his last will and testament that although he had sustained exceeding great losses during the troubles of the civil war, yet he should leave behind them at the hour of his death 4,116 slaves belonging to his retinue; in Oxen, 3,600 yoke; of other cattle 257,000 head; and in ready coin 60,000,000 sesterces Roman. Upon his funeral he gave express orders that 1100,000 sesterces should be expended.

"But what of all this? Suppose all these enormous riches to be added together, they will come nothing near to the wealth of King Ptolemæus who, when Pompey the Great warred about Judæa, maintained 8,000 horsemen in pay continually with his own private purse, kept an ordinary table within his court of a thousand persons, and every man had his own cup of gold to drink out of, and at each course and change of meats that came in new plate was served up to the board. These guests of his fared so highly that a man would have said they had been frank-fed.

"But how far short was this mighty and sumptuous prince, think ye (for I will say no more now of Kings) in comparison of one Pythius, a Bithynian, who sent unto Darius the King a present of a Plane-tree, all of beaten gold, also that famous gold Vine, so much renowned by all writers; feasted the whole army of that mighty

monarch, and those were 788,000 men; promising over and above five months' pay for them all and corn for the same time to serve the whole camp, if only the King would spare him one of five sons he had of his own to bear him company in his old age and not press him to serve in the wars. And yet, let any one compare the wealth of Pythius to that of that rich Crœsus, King of Lydia! What folly and madness in the devil's names is this, to hunger and thirst so much in this life after that which is either common to base slaves and may fall to them or else whereof Kings themselves can find no end! And thus much of gathering good and heaping riches together." [85]

Gold leaf was freely used. An ounce could be hammered out into 750 leaves or more, each of them "four fingers" each way. The beams in the temple of the Capitol were covered with this foil and the private houses of the rich all had gold ceilings. The walls as well as the silver plate on the sideboards were gilded. The thickest gold foil was called Prænestium because the image of Fortune at Præneste was more richly gilded than any others; and there was a thicker kind still for gold plating. The metal to be gilded was first rubbed with quicksilver (life-silver) and the gold then applied. Pliny remarks that quick-silver ought by rights to be called "Death-silver", because it was a poison to everything and the only thing it loved was gold.

"All the gold employed in sacrifices to the honour of the gods was in gilding the horns of the beasts that were to be killed, and those only of the greater sort. But in warfare among soldiers the use of gold grew so excessive that the field and camp shone again; so much so that at the expedition to Macedonia, where the Marshals and colonels wore armour set out with rich buckles and clasps of gold, M. Brutus was offended and stormed mightily, as appears by his letter from the Plains of Philippi. Well done, O Brutus, to find fault with such wasteful superfluity! But why did you say nothing of the gold that the Roman dames in thy time wore in their shoes. And this evil precedent brought in another mischief just as bad, namely, that men also should wear bracelets of gold on their arms next their bare skin, an ornament called Dardanium because the invention came from the Dardanians. Oh! the monstrous disorders

that have crept into the world! But say that women may be allowed to wear as much gold as they please, in bracelets, in rings on every finger and joint, in carkanets about their necks, in earrings pendant at their ears, in stays, wreaths and chin-bands; let them have their chains of gold as large as they list under their arms or across their sides scarf-wise, with collars of gold thick beset with ropes of pearls pendant from their neck below their waist; that in their beds also, when they are asleep, they may remember what a weight of pearls they carry about them: must they therefore wear gold upon their feet?" [86]

When gold could not be used, silver took its place. Side-boards were loaded with silver plates; kitchen utensils in the houses of the very rich must be of the same costly metal; and for articles of furniture, beds, tables, couches it was used lavishly. The silversmiths at Rome did a roaring trade, and it appears that there was the same kind of competition between the different shops as there is to-day.

"The world is given to such inconstancy that no workmanship will please any one very long. At one moment we must have our plate out of Furnius's shop, at another we insist on being furnished from Clodius; and again in a new fit nothing will content us except it is Gratius's making (for our cupboards of plate and our tables, forsooth, must bear the name of such and such Goldsmiths' shops). Moreover, when the toy takes us in the head, all our delight is in chased and embossed plate; or else so carved, engraved and deeply cut as to be rough in the hand, wrought in imagery or flower work as if the painter had drawn them. And nowadays we are come to this pass that our dishes are set upon the table, borne up with feet and supporters to sustain the viands therein; but their sides must be pared away very close, because the more that the sides and edges have lost by the file, the richer is the plate esteemed to be.

"As to the saucepans in the kitchen, did not Calvus the noble Orator complain in his time that they were of silver? Why, we in these days do more than that, for we cover our coaches with silver, curiously wrought and engraved. And it is within our remembrance that the Empress Poppaea, wife of Nero the Emperor, was known to order her coach-horses and other palfreys to be shod with clean gold. To what excess and prodigality is the world now come to. Scipio Africanus left no more to his heir in silver plate and coin

than 32 pound weight, and yet this worthy knight, when he rode in triumph for the conquest of the Carthaginians, showed in that solemn pomp and brought into the chamber of Rome as much treasure as amounted to 4,370 pounds weight of that metal. This was all the treasure in silver that the whole state of Carthage was able to make in those days—Carthage that great and proud city which pretended a title to the Empire of the world. Yet see! In this age there is as much laid out in our cupboards of plate and furniture of our tables.

"A long time ago it was the fashion at Rome for our dames to have their beds covered all over with silver; yea, and some dining-rooms with tables laid with the same. This invention is said to have come from Carvilius Pollio who devised to garnish his boards with silver, not covering them throughout with silver plates but only by parcels according to the Punic or Carthaginian fashion. The same Pollio made beds and tables of gold; and it was not long before silver beds or couches came into fashion, in imitation of those in the Isle Delos. But all this sumptuosity was sufficiently punished by the civil war of Sulla, for a little before those troubles men began to make great chargers and platters of silver, weighing one hundred pound apiece, of which there were at Rome, as is well known, more than five hundred when the war began; and this was the cause why many men fell into the danger of proscription and confiscation since their rich plate set their enemies' teeth on water."

[87]

Furniture, too, had its fashions among the wealthy. At one time sideboards inlaid with tortoiseshell were all the rage. Stoutly made pieces of furniture were covered with maple and citron wood. Very soon silver was added in the same way as book covers were decorated and protected with thin sheet laid on the corners and sides. Enormous prices were paid for certain engraved vessels called "Dolphins", which fetched as much as 5,000 sesterces a pound. Crassus the orator confessed that for some cabinet pieces of plate he had paid as much as 6,000 sesterces a pound and felt positively ashamed to use them or even show them in public.

With this extravagance Pliny had no sympathy. The conquest of Asia had brought into Italy much wasteful excess and did even "greater damage to the integrity of manners: for from that time forward men grew to be shameless and without

regard of modesty. Every man's fingers itched for all the pride and pleasure of the world which was to be found at Rome." The army, too, was becoming demoralised. Everything was done to curry favour with the higher powers, even to presentations of silver statues.

"Men have commonly thought that the first statues of silver seen in Rome were made in honour of the Emperor Augustus by way of courting and flattery to win his grace and favour, as those times did require. But it is altogether untrue, for before his day we find that Pompey the Great, when he rode in triumph, caused the silver statue of King Pharnaces to be carried in solemn show, as also the image of Mithridates his father, besides chariots both of gold and of silver.

"Moreover, it falls out sometimes that silver is used instead of gold upon some urgent cases and just occasion, as we may see by our proud and sumptuous dames that are but commoners' wives who are forced to make themselves carquans and such ornaments for their shoes of silver, because the rigour of the statute provided in that case will not permit them to wear the same of gold. I myself, as I remember, have seen Aurelius Fuscus (a gentleman of Rome, who lost the dignity of a man of arms by reason of a calumniation framed against him when young gentlemen's sons used to accompany him because he had the name of a brave soldier) wear his rings of silver. But to what purpose do I collect these examples, seeing how our soldiers make no reckoning of ivory, but the hilts of their swords and the hafts of their daggers are garnished with silver, damasked and engraved? Their scabbards and sheaths are set out with silver chapes and their sword girdles, hangers and bawdricks gingle again with thin plates of silver. And do we not see how our fine dames wash and bathe in silver, disdaining and setting light by any other bathing vessels in the baths? Oh that Fabricius were alive now to behold these things! If he saw our women bathing together with men in one and the same baths, and those paved (as it were) under foot with silver so smooth and slippery that they cannot keep their feet: Fabricius, I say, who forbade expressly that any warriors and General captains should have in plate more than one drinking goblet and a salt-seller. If he saw silver thus melted and broken to serve these purposes, what would he say but 'What a world is this!' "

[88]

CHAPTER XIII

Of Precious Stones

GEMS, according to Pliny, were the concentrated expression of the beauty of the world, and included even such stones as crystal and chalcedony which, however beautiful, would not be reckoned as precious to-day. It would be difficult to interpret all Pliny's references correctly, because he was compelled to rely on verbal descriptions and superficial appearances, instead of being able to apply the chemical tests on which all modern distinctions are based.

It is doubtful, for instance, whether Pliny ever saw or handled a diamond, although the stone "Adamas" certainly suggests the diamond. On the other hand he would have failed to observe any difference between a cut white sapphire and a cut diamond. The word "adamas" signifies "invincible by fire", and under this title Pliny mentions as many as six varieties which probably included various kinds of quartz. The tests of resisting the blow of a hammer on an anvil, or of burning, would certainly not be passed by a diamond.[1]

Pliny's catalogue of gems is reminiscent of those set in Aaron's breastplace of judgement and may for convenience be

[1] As an example of the confusion that existed even through the Middle Ages about diamonds the remarks of Sir John Mandeville have some point. He warns buyers not to be deceived by "gabbers that go by the country to sell them. For whoso will buy the diamond it is needful to him that he know them. Because that men counterfeit them often of crystal that is yellow and of sapphires of citron colour that is yellow also, and of the sapphire loupe and of many other stones." A test of the genuineness of the stone was recommended which shows the curious relation the diamond was supposed to have with the loadstone: "Men take the adamant, that is the shipman's stone, that draweth the needle to him, and men lay the diamond upon the adamant, and lay the needle before the adamant; and if the diamond be good and virtuous, the adamant draweth not the needle to him whiles the diamond is there present."

taken in the same order. In the first row of the breastplate, it will be remembered, were a sardius, a topaz and a carbuncle. It was a sardonyx ring, so Pliny tells us, which King Polycrates of Samos flung into the sea and had returned to him in the belly of a fish. The story runs that—

"in the height of his felicity and happy estate which he himself confessed to be excessive, and being willing after a sort to play at fortune's game, one while to win and another while to lose and so in some measure satisfy her inconstancy, was persuaded in his mind that he would content her sufficiently by the voluntary loss of one gem that he had and which he set great store by. Seeing therefore the world come upon him still and no sour sorrows intermingled with his sweet delights, in a weariness of this continual blessedness, he embarked and sailed into the deep where wilfully he flung into the sea a ring from his finger together with the precious stone set therein. But see what ensued! A mighty fish, made (as a man would say) fit for a king, chanced to swallow it down as if it had been some bait. Being afterwards caught by fishers and thought to be of an extraordinary bigness, it was brought as a present into the King's palace and so sent into the kitchen, where the cook found within the belly the ring of his lord and master. Oh, the subtlety of sly Fortune, who all this while twisted the cord that another day should hang Polycrates! This stone (as is well known) was a Sardonyx and, if we may believe it, the very same which is shown at Rome in the temple of Concord, where the Empress Augusta dedicated it as an oblation, enchased within a golden horn." [89]

Pliny mentions three or five varieties of sardonyx, including the sard and carnelian. His classification of precious stones was based on colour, the main distinctions being blue, red, green, yellow and white. The topaz is described as a green stone, rather soft and brought from an island in the Red Sea; no doubt a Peridot, or green olivine.

A statue, four cubits high, was said to have been made of Queen Berenice in this stone. A golden coloured variety of topaz resembled "the juice of Porret"—a somewhat strange comparison with a spring onion.

Carbuncles were a numerous family embracing the whole range of hard red stones, such as rubies, spinels and garnets.

The name "ruby" signified fire; it is to be noted that the male stones were "more fire-like" than the female, either flaming more clearly, or darker and blacker. The gentler sex, it appears, shone with a softer and more delicate light. It seems that sham rubies made of glass were often put on the market; but the way to discover the fraud was to test them on a grindstone, the counterfeit gems being softer and more brittle than the fine and pure stones. The weight also and "little risings", or bubbles, were a sure sign.

The second row of Aaron's breastplate included an emerald, a sapphire and a diamond. Twelve varieties of emeralds are mentioned, including the true gem which was much used for engraving seals. Felspars of various kinds probably belonged to this list. The ancient sapphire was the Lapis Lazuli, described as an opaque blue stone with gold spots.

The emerald is highly praised as having the most pleasing colour of all, giving us the same delight that we experience in beholding green herbs and leaves of grass. It refreshes the eye and yet never satiates it:

"If the sight has been wearied and dimmed by intentive poring upon something else, the beholding of this stone refreshes and restores it again, which lapidaries that cut and engrave fine stones know well: for they have not a better means to refresh their eyes than the Emerald, the mild green that it has so comforts and revives their weariness and lassitude.

"Moreover, the longer and farther off a man looks upon Emeralds the fairer and bigger they seem to the eye, because they cause the reverberation of the air about them to seem green, for neither Sun nor shade, nor yet the light of a candle, causes them to change and lose their lustre. They send out their own rays gradually, little by little, so that they entertain reciprocally the visual beams of our eyes; and for all the spissitude and thickness that they seem to have, they allow our sight to pierce gently into their bottom. They are often shaped hollow and thereby gather, unite and fortify the spirits that maintain our eyesight. Because of the manifold pleasures that they show to our eyes they are spared by universal consent, and lapidaries are expressly forbidden to cut and engrave them. When you find a table-Emerald hold its flat face against anything and it

will represent the object to the eye as well as a mirror or looking-glass. Indeed the Emperor Nero was accustomed to watch the combats of fencers and sword-players in a fair Emerald." [90]

The meaning of the last sentence has been widely debated; by some an error in the manuscript is suspected. Nero was definitely short-sighted; but whether he used an emerald as an eye-glass, or a mirror, or for some other reason, it is impossible to say.

The third row of Aaron's breastplate consisted of a ligure, an agate and an amethyst. The ligure may be identified with the yellow zircon, or citrine, a yellow quartz. Agates were, in a sense, the most medicinal stones of all. They had qualities of holiness attached to them which supported a reputation for the cure of the stings of venomous spiders and scorpions. The claim to the miraculous was that—

"you will find imprinted naturally in them the form and proportion of rivers, woods and labouring horses, coaches and little chariots or horse-litters, together with the furniture and ornaments belonging to horses. As for Physicians, they make from it grinding stones and mortars for fine powders, and it is believed that only to behold and look upon an Agate is very comfortable for the eyes. Some hold the opinion that the singular grace and commendation in an Agate is to be clear and transparent like glass. Those in Thrace near the hill Parnassus have flowers imprinted in them like those growing by the highways and paths in the fields.

"The Magicians observe other sorts. For instance, there are those which are like a Lion's skin and these they say are powerful against scorpions. In Persia they are persuaded that a perfume of such Agates turns away tempests and all extraordinary impressions of the air, and also stays the violent stream and rage of rivers. To know which was proper for this purpose they cast them into a cauldron of seething water: then if the stones cool it, it is an argument that they are right. To make sure that they will do good, they must be worn tied by the hairs of a Lion's mane. As to those Agates which seem to have the print of a Hyena's skin, the Magicians cannot abide them, as causing discord in a house. They hold too that the Agate of one simple colour causes the wrestlers who have it about them to be invincible. A proof of this they take by seething it in a pot full of

oil, with different painters' colours. Within two hours after it has sivered and boiled therein, it will bring them all to one entire colour of Vermilion." [91]

The last row of Aaron's breastplate consisted of a beryl, an onyx and a jasper. The beryl is probably the "smaragdos" of Pliny which ran to eight varieties, one of them being the aquamarine. The onyx was much used by the seal engravers and attention was paid to the qualities of the layers of colour. The Roman connoisseurs delighted to draw distinctions between the different schemes and the order in which the colours lay. The jasper belonged to a large family ranging from sea-green to sky-blue.

A number of gems had Greek names taken from resemblances, fancied or otherwise. Thus we find a grape-cluster stone; others with such epithets as onion, tortoise, golden-light, golden-face, garden, laurel, heart-shaped, stone of the religious, milk, Gorgon, Idæan fingers, gems of Jove, meadow green, white-eye, worthy-of-all-love, gem of the Sun, wolf's eye, peacock, beetle, oak, ivy, daffodil, fire-lighting—with other popular names which defy any accurate guess as to their identity.

India was the mother of opals. They were held remarkable for giving in one single stone the fire of the ruby, the purple of the amethyst, the green of the emerald, all glittering together in an incredible manner. Yet the opal had recognised blemishes —when, for instance, it resembled the flower of "that herb which is called Heliotropium, *id est*, Turnesole"; or parts of it looked like hail or grains of salt or were rough to the touch. The Indians could imitate it very closely in glass; an early age for forgeries. The only way to distinguish the true from the false gems was to hold it up to the light.

Here is a story illustrating the danger of exciting cupidity—

"I am reminded of a story among us worthy of remembrance. At this day one of the Opals can be seen for which Marcus Antonius outlawed Nonius, a Senator of Rome, the son of that Struma Nonius at whom the stomach of Catullus the Poet rose so much, seeing

him (as he did) sit in a stately chair of ivory called Curulis. Now this Senator when he was driven to fly upon this proscription took nothing with him but only the ring in which this opal was set, valued (as is well known) at twenty thousand sesterces. But since the cruel and inordinate appetite of Antony was wonderful on the one side, so the peevishness and contumacy of Nonius was as strange on the other side, for he was so far in love with that gem which cost him his proscription that rather than part with it he suffered himself to be turned out of house and home. And yet those wild beasts are better advised who are content to bite off the parts of their body for which they see themselves in danger of death and leave them behind for the hunters." [92]

The reference is to the elephants who were said to leave their tusks behind in order to pacify their pursuers and so enable them to escape with their lives.

Turquoises also came from the East. In India they were found on icy cliffs, almost inaccessible, where they stood out like bosses or eyes. As the people of those districts were disinclined to climb, they slung stones at the face of the cliff to bring them down. Collars and chains of these gems were a sign of great wealth, and it is remarked that no precious stone looks better than the turquoise mounted in gold, a taste not so general in the Western world as in the Eastern.

The Amethyst derived its name from its resemblance to the colour of wine. It was a favourite stone to engrave and the choicer specimens were often called "Venus Gems" from their grace and loveliness. Another cause for popularity was their efficacy as charms. An amethyst could withstand drunkenness; and hung about the neck by a baboon's hairs or swallows' feathers would counteract sorceries and poisoning. It could also assist negotiations with princes, bring fine weather and turn away locusts if the proper prayer were said: in every way a useful stone. But Pliny somewhat dashes any hopeful anticipations by remarking how mankind is fooled by these vanities.

We are left with three substances which were regarded by the ancients as precious—crystal, glass and amber. Crystal

was believed to proceed from extreme cold, to be a liquor congealed by frost in the manner of ice, as the Greek word denotes.[1] Certain celestial humours, rain and fine snow, contributed to its growth, mainly in the higher regions of the Alps where men had to hang by ropes to get it. Because of its origin it was considered a wonderful material for making drinking vessels. "Not many years ago", Pliny says, "a dame of Rome, and she none of the richest, bought a bowl or drinking cup of crystal and paid 150 sesterces for it." Nero in one of his passions caught up two crystal drinking cups and, to demonstrate his amiable nature, dashed them to pieces because "he could think of no better way to indulge his spite than to prevent any one else drinking out of those glasses."[2]

While crystal was a product of cold, glass came from heat. The discovery of glass is attributed to an incident at the mouth of a river near Mount Carmel where the sand was said to be exceptionally pure and refined over a distance of about half a mile.

"The story is that certain merchants arrived in a ship laden with nitre in the mouth of this river and, being landed, minded to cook their victuals on the shore and the sands. But as they wanted other stones to serve as trevets to support their pans and cauldrons over the fire, they made shift with certain pieces of saltnitre out of the ship and so made a fire underneath. When this was once afire among the sand and gravel of the shore they perceived a clear liquor run from under the fire in transparent streams; and this was how, so they say, came about the first invention of making glass." [93]

Actually such an event is incredible. The material could not

[1] Sir John Mandeville refers to the Himalayas as a part of the world so cold that the water itself becomes crystal. Here again the inevitable diamond is mentioned. "And upon those rocks of crystal grow the good diamonds that be of trouble (turbid) colour. Yellow crystal draweth colour like oil. And they be so hard that no man can polish them." But the diamonds found in Arabia and the isle of Cyprus, we are told, could be easily polished, so that doubts might reasonably be held of their authenticity. Harder diamonds appeared to come out of masses of gold ore, a fact which plainly points to quartz.

[2] Herodotus had a strange story of the Ethiopians making a mummy of a corpse and, after painting it, enclosing it in a crystal pillar which had been hollowed out to receive it, "crystal being dug up in great abundance in their country and of a kind very easy to work." The corpse was plainly visible and was honoured with sacrifice by the next of kin for a whole year, when apparently the pillar was taken out and set up near the town.

have been brought to a sufficiently high temperature to cause fusion; also the nitre was an incorrect ingredient. Another story occurs of an invention of a malleable glass that would not break when dropped on the ground. This invention, it is said, was promptly suppressed by Tiberius as being detrimental to the glass-making industry; indeed the inventor paid for his ingenuity with his life. In 1610 it was rumoured that the Sophy of Persia presented the King of Spain with six flexible glass cups, and since then there have been constant rumours of successful attempts in the same direction.

One of the ingredients for glass making is stated to have been the Load-stone (by which manganese is probably meant) the idea being that "it was thought to draw the liquor of glass to it, as well as iron." This adds to the ancient mystery of glass, because the magnet, or loadstone, was considered by Pliny to be the most wonderful thing in all creation. It seemed incredible that Nature should bestow on the stiff hard stone "sense and hands also" to tame and conquer the stubborn and rebellious iron and seize it in its grasp. The first discoverer was said to be a Neat-herd who kept his beasts on Mount Ida and noticed that the hob nails in his shoes stuck to this stone, also the iron pick of his staff. (The story is repeated in another form in the adventures of Sinbad the Sailor.)

Pliny quotes Sotacus as distinguishing between the sex of the loadstones; and with this peculiarity it is to be noted that the power of stones to beget other stones was a common belief of the time. "Those of Baeotia", we read, "are more red than black, and the kind that is found in Troas is black, of the female sex, and consequently destitute of attractive power and not of that virtue that others are." Here again a curious prejudice is in evidence. Theophrastus was persuaded that some stones brought forth others and instanced a certain mineral ivory found in the ground—probably fossil remains. Moon stones were believed to hang from trees in Arabia and to generate their own species. The idea of stones multiplying is not yet dead in districts where farmers still believe that they multiply in the fields like potatoes.

We now come to amber about which the Greeks told many marvellous tales. It excited Pliny's stern indignation that so much wrongful information has been put about on the debatable question of its origin.

"First and foremost therefore many of their Poets tell us a tale of how the sisters of the young prince Phaëton, weeping piteously for the miserable death of their brother who was smitten with lightning, were turned into Poplar trees, which instead of tears yielded every year a liquor called Electrum (that is Amber), and this issued from them where they grew on the banks of the River Po. The reason why the name Electrum was given was because the Sun in old time was usually called Elector (as rousing and raising us in the morning out of our beds) in Greek.

"But it appears that this is one of their loud lies by the testimony of all Italy. Some of these Greek writers, the more speculative among them in the works of Nature than their fellows, have told us of certain Islands lying along the Venetian gulf, called Electrides, where amber is gathered washed down by the River Eridanus, which we call the Po, into the sea. However, it is well known that there were never yet Islands so named within that tract; no, nor any islands at all near the place into which the River Po could possibly bring anything at all down his stream. As for Æschylus the Poet, who says that the river Eridanus is in Spain, he and others show their gross ignorance in Cosmography and description of the world, and therefore they should be pardoned if they knew not what Amber was. Those that write more modestly than the rest (and yet can lie as well as the best) bear us in hand that upon rocks otherwise inaccessible in the Adriatic Sea trees grow which yearly at the rising of the Dog star yield this amber in the form of a gum. Theophrastus, on the other hand, affirms that amber is dug out of the ground. Philemon would have us believe that amber is mineral and got out of the earth in Scythia in two places. In the one it is found white, the colour of wax, which they call Electrum: in the other it is reddish or tawny and that is named Sualternicum. Sudines talks of a tree in Liguria which bears this amber. Sotacus was persuaded that it ran down from certain trees in Britain. Pytheas affirms that the Gutti, a people of Germany, inhabit an arm of the Ocean called Mentonomon, a day's sailing from which lies an Island called Abalus where at every Springtide there is cast up by the waves of the sea at high

water a great quantity of amber. And this is taken for nothing else than a certain excrement congealed and hardened which the sea in that season purges and sends away. The inhabitants of those parts (says he) burn it for ordinary fuel and sell it to the Saxons and other Dutch, their next neighbours. Niceas would have us conceive that it is a juice or humour proceeding (I wot not how) from the rays of the Sun: he imagines that the beams are exceeding hot towards Sunset and these rebounding from the earth leave behind them a certain fatty sweat in that part of the Ocean and this afterwards is cast up on the Sea-shore and sands of the Germans. He writes also that the Indians make more account of it than frankincense; and that in Syria the women make the whirls of their spindles of this substance and call it Harpax ("to drag") because it will catch up leaves, straws and fringes hanging to cloths.

"Theomenes says that near the Greater Syrtis, where the garden of the Hesperides lies, a man will find that amber falls out of this garden into a lake beneath, and that the virgins attending upon that place come to gather it. But I wonder most at Sophocles the Tragic Poet (a man who wrote his Poesies with so grave and lofty a style, and lived besides in so good a reputation) that he should go beyond all others in fabulous reports as touching Amber: for he does not hesitate to avouch that in the countries beyond India it proceeds from the tears that fall from the eyes of the birds Meleagrides, wailing and weeping for the death of Meleager. Who would not marvel that either he himself should be of that belief or hope to persuade others to his opinion? What child is so simple and ignorant as to believe that birds should shed tears so regularly every year, especially such great drops and in such quantity, sufficient to engender Amber in that abundance? Besides, what congruity is there that birds should go as far as the Indians and beyond to mourn and lament the death of Meleager when he died in Greece? What is one to say of many tales as good as these which Poets have sent abroad into the world? Their profession of Poetry, that is to say, of feigning and devising fables, may in some sort excuse them: but that any man should seriously and by way of history deliver such stuff about a thing so rife and common, brought in every day in abundance by merchants, is a mere mockery of the world in the highest degree, a contempt offered to all men and argues a habit of lying and an impunity of that intolerable vice." [94]

Pliny takes his science with commendable seriousness and

offers his own simple explanation that amber issued from trees resembling pines in the same way as gum was produced from cherry trees. He proves to his own satisfaction that it dropped at first very clear and liquid and then congealed with the cold, or thickened with the heat, as is shown by the fact that one can see many curious things within, such as ants, gnats and lizards which no doubt were "entangled and stuck within when it was green and fresh and so remained enclosed as it became harder." Very large quantities were brought to Rome; one piece weighed as much as thirteen pounds. It seems to have been used at the circus for the biers and burial appliances of unfortunate gladiators.

Lastly, there are pearls. Pompey is blamed for starting the craze in Rome for pearls and precious stones. When he entered the city in triumph there were carried before him such magnificent objects as a chess board, two feet by four, on which all the men were made of rare stones; a golden moon, weighing thirteen pounds; three dining tables of gold; thirty-three coronets mounted with jewels; a mountain made of gold with red deer, lions and fruit trees adorning the slopes; and an oratory of pearl with a kind of clock on the top. But his own portrait made of pearls was the crowning achievement—

"And that good face and venerable visage so highly honoured among all nations was now all pearls, as if that manly countenance and severity of his had been vanquished, and riotous excess and superfluity had triumphed over him rather than he over it. O Pompey, O Magnus, how could this title and surname *Le Grand* have continued among those nations if in thy first victory thou hadst triumphed after this manner! What, Magnus, were there no other means but to seek our pearls (things so prodigal, superfluous, devised for women and such as not to beseem Pompey to wear about him) and therewith to portray and counterfeit thy manly visage! Was this the way to have thyself seem precious? Does not that portraiture come nearer thee and resemble thy person far liker which thou didst cause to be erected on the columns and pillars on the top of the Pirenaean hills?" [95]

This magnificence paved the way to even greater displays.

Nero had the sceptres and maces embellished with the finest and largest pearls; "yea and the very bedrooms which went with him when he travelled". Musicians, actors and minstrels were noted for the gay and glittering gems they wore—not, it is hinted, always in the best of taste. The moral that Pliny deduces from these displays is that when actors and musicians make such a vulgar use of jewellery it should serve as a lesson to "pull down the plumes" of those who pride themselves so much on what after all is merely an empty form of personal ostentation. The little pearl buskins which the Emperor Caligula used to draw upon his legs were a sad example of these effeminate tricks and womanly devices.

CHAPTER XIV

Of Painters

THE question may be asked: what would have been the fate of European painting if the Greeks had never practised the art? The answer is that probably some Eastern form of pictorial expression akin to that of India or Persia art would have been more or less permanently adopted. The classical, or Grand style, initiated at the Renaissance, was directly inspired by the Greek painting of the fourth and fifth centuries B.C.

Many examples of the finest Greek and Roman sculpture remain, but of the pictures there are few traces, and those only reproductions of the original masterpieces, the majority of them recovered from Herculaneum and Pompeii. In the 35th Book of the *Natural History* descriptions can be found of some of the pictures actually discovered in the ruins. Vasari, writing in 1550, discusses other paintings excavated from the lower rooms of the old Roman palaces—notably of the Golden House of Nero[1]—which Totila destroyed when he gave up the city to plunder and the sword, leaving no treasures of art intact if he could avoid it.

A curious point mentioned by Vasari is that these rooms buried in the earth were named "grottoes" by the moderns of his time, which brought the word "grotesque" into use.

The origin, or invention, of painting did not of course escape the curiosity of Pliny. He summarily dismisses the claim of the Egyptians to have initiated the art five hundred years before as "a vain brag and ostentation". Here Pliny was

[1] Pliny tells us that the pictures on the walls were painted by Fabullus, dressed in his toga to show that he was not a foreign artist but a freeborn Roman.

a little injudicious. He preferred, however, to attack the problem from an angle less historical, and claimed that the first portrait ever made was merely the tracing of lines round the shadow of a person to show his proportions and lineaments. The next step was to fill in the outline with colour—a sketch, to adopt the Greek word, in "monochrome". Cimon made an advance with works called Catagrapha, or foreshortenings. The head was first drawn by him to denote a person looking different ways—an innovation of some moment. Very soon limbs were represented knit in different attitudes, and garments were modelled in folds and wrinkles. Battles became a favourite subject for painters; and to encourage the enterprise of artists prizes were offered at the Games. Challenges also were thrown out by rivals, which excited great interest, as is to be seen in the famous contest between Zeuxis and Parrhasius. Novelties in the matter of treatment were welcomed and painters became bolder in their range of subjects. Polygnotus, for example, painted a man on a ladder so skilfully that it was impossible to tell whether he was climbup or coming down. Why this particular form of illusion should be so highly admired is not stated. Apollodorus, the Athenian, went a step further and painted a priest praying and worshipping; also an Ajax apparently struck by a flash of lightning. These works were held to mark a considerable advance.

Of the many painters mentioned by Pliny three stand out conspicuously from the rest: Zeuxis and Parrhasius and Apelles.

Zeuxis, as he became famous, acquired great wealth and cut a figure in the world which Rubens at the heights of his success might have envied. He attended the games at Olympia with his name embroidered in gold letters on his cloak and decided to work no longer for money, but to give away his pictures, on the ground that he valued them higher than any price. Among his gifts were a picture of Queen Alcmena to the Agrigentines and of the god Pan to King Archilaus.

"There was also the portrait of Lady Penelope, which he drew

in colours, wherein he seems not only to have depainted the outward personage and feature of the body, but also to have expressed most lively the inward affections and qualities of her mind. There was also much talk of a wrestler or champion of his painting, with which he was so pleased that he subscribed this verse under it, *Invisurus aliquis facilius quam imitaturus* (Sooner will a man envy me that set such another by me). And this grew to be a byword in every man's mouth.

"One stately picture there is of his workmanship, Jupiter sitting upon a throne in his majesty, with all the other gods standing by and making court to him. He portrayed Hercules also as a babe lying in the cradle and strangling two fell serpents with his hands, in the presence of his mother Alcmena and her husband K. Amphitryon, both affrighted at the sight thereof." [96]

The love of illusion and the high estimation placed on it (as if painting were almost a kind of conjuring trick), is well brought out by the stories of Zeuxis and Parrhasius competing with one another.

"Parrhasius is reported to have been so bold as to challenge Zeuxis openly and to enter the lists with him for the victory. In which contention and trial Zeuxis for proof of his cunning brought upon the scaffold a picture in which clusters of grapes were painted so lively that the very birds of the air flew flocking thither to be pecking at the grapes. Parrhasius, on the other hand, to show his workmanship came with another picture in which he had painted a linen sheet, so like a curtain that Zeuxis (in a glorious bravery and pride of his heart, because the birds had approved of his own handiwork), came to Parrhasius and said by way of a scorn and frump, 'Come on, sir, away with your curtain so that we may see your goodly picture'. But perceiving his own error, he was mightily abashed and like an honest-minded man yielded the victory to his adversary, saying, 'Zeuxis hath beguiled poor birds, but Parrhasius hath deceived Zeuxis, a professed artisan'.

"This Zeuxis, as it is reported, painted afterwards another picture in which he made a boy carrying certain bunches of grapes in a basket; and seeing again that the birds flew to the grapes, he shook his head, and coming to his picture, with the like ingenious mind as before, brake out into these words and said: 'Ah, I see well enough where I have failed. I have painted the grapes better than the boy;

for if I had done him as naturally, the birds would have been frightened and never approached the grapes." [97]

Shakespeare used this tale of deception to express in vivid terms the disappointment of Venus:

> "Even as poor birds, deceiv'd with painted grapes,
> Do surfeit by the eye and pine the maw,
> Even so she languisheth in her mishaps
> As those poor birds that helpless berries saw."

Another bird story is that of Lepidus, a member of the Triumvirate at Rome, when he was once lodged by the magistrates in a house surrounded by woods:[1]

"The next morrow Lepidus took them to task and in bitter and minatory words chid them because they had laid him where he could not sleep a wink all night long for the noise and singing that the birds made about him. Accordingly being thus checked and rebuked, they had a long dragon or serpent painted on a piece of parchment of exceeding length and with this they compassed on the next night the place where Lepidus should take his repose. The sight of this serpent so terrified the birds that they had no mind to sing but were altogether silent. This experiment showed how birds by this means might be stilled." [98]

Parrhasius, like Zeuxis, had an excellent conceit of himself. "There was no one so arrogant as he in regard to his own cunning and reputation, which he knew well enough, and no man needed to tell him. He assumed imposing titles, such as Abrodiaetus, which meant fine, delicate, sumptuous; for he would be in his purple, adorned with gold chaplets, his staff tipped with gold and his shoebuckles in the same metal!" He even claimed descent from Apollo and painted a portrait of Hercules as he appeared to him in his sleep. This brings him in line with Blake who professed that he had seen Satan with his bodily eye and that he had actually painted Lot from life.

[1] The same type of story occurs in Chinese literature—of paintings of hawks hung up to frighten away the pigeons that were apt to defile the faces of the gilt Buddhist images. In the houses, too, pictures of cats were guaranteed to scare the mice away, and dragons were sometimes painted so vividly that they were likely at any moment to take wing and disappear altogether.

Parrhasius owes his title to fame for having developed the principle of light and shade, or chiaroscura, in his pictures; but it would appear that he and Zeuxis were equally expert in the new discovery.

"He was the first that gave true symmetry to his figures and observed the just proportions. He first exactly expressed the sundry habits and gestures of the countenance: it was he that first stood upon the curious workmanship of couching and laying the hairs of the head in order; the level grace and beauty about the mouth and lips he first exactly expressed: and by the confession of all painters that saw his work he won the prize and praise from them all in making the right contours, which is the principal point and hardest matter belonging to the whole art. To outline well, that is to say, to make the extremities of any part, to mark duly the divisions of parcels, and to give every one their just compass and measure, is exceeding difficult, and few, when they come to the doing of it, have been found able to attain to that felicity. For the utmost edge of a work must fall round upon itself, and so made to terminate in the end as to shadow what is behind, and yet show what it seems to hide." [99]

Apelles, the third and greatest of the Greek painters, was a favourite at Court who enjoyed the same familiarity with Alexander the Great that Velasquez received at the hands of Philip II.

"Apelles was always very courteous and fair spoken, in which regard King Alexander the Great was much taken with him and frequented his shop in his own person. He issued the straight commandment that no painter should be so hardy as to make a picture of him but only Apelles. One occasion when the King was in his studio and was talking much about his art and many times letting fall some words to little purpose, thus betraying his ignorance, Apelles, after his mild manner, would desire his grace to hold his peace, and say, 'Sir, no more words, for fear the prentice boys over there who are grinding the colours may laugh you to scorn'. The King had such a high opinion of him that, being otherwise a choleric prince, yet he would take any word at his hands in the best part spoken in that familiar way and never be offended."[1] [100]

[1] Plutarch gives us fuller details of Alexander's person as rendered by contemporary artists. Lysippus was the only sculptor Alexander would allow to portray him and

Apelles proved himself a born courtier also by the tactful manner in which he painted the portrait of King Antiochus. The King had only one eye to see with; so Apelles painted him in profile, at that time a complete innovation. It became the fashion in this manner to conceal "the defects and blemishes of the visage and to make only one half of the face". His most famous portrait of Alexander depicted him holding a thunderbolt and lightning in his hand. To express lightning he painted three shafts bound together in the middle and the illusion was heightened by the fingers of Alexander's hand which were painted in such high relief that "the lightning appeared to be darting clean out of the picture and not once to touch it."

His reception at the Egyptian Court was not so friendly.

"He could never win the love and favour of Prince Ptolomæus, who at that time followed the court of K. Alexander and was afterwards King of Egypt. It happened that after the decease of Alexander, and during the reign of King Ptolomy aforesaid, Apelles was cast by a tempest upon the coast of Egypt and forced to land at Alexandria: where other painters, who were no well-wishers of his, bribed the king's jester to invite Apelles to take his supper with the king. To the court came Apelles according and showed himself in the presence. Ptolomy having espied him with a stern and angry countenance demanded of him what he made there, and who had sent for him; and showing him all his servitors who ordinarily had the inviting of guests to the king's table, commanded him to say which of them had bidden him. Apelles, not knowing the name of the party who had brought him thither and being thus put to his shifts, caught up a dead coal of fire from the hearth and began to draw on the wall the proportion of the cousiner beforesaid. He had no sooner begun to trace the likeness than the king immediately took knowledge of the party that had played this prank on him and caused him this displeasure." [101]

Apelles wrote books setting out the rules and principles of

he made a characteristic statue of him with his head a little inclined to one side and "his melting eye expressed with great exactness. But Apelles, who drew him with thunderbolts in his hand, made his complexion browner and darker than it was naturally; for he was fair and of a light colour, passing into ruddiness in his face and upon his breast."

painting and was fond of saying that many pictures in other ways excellent so often lacked "the Venus which they should have"; by which he meant the quality of beauty or grace. This was the one quality on which he prided himself in his own paintings. He also flattered himself that he knew when to stop. He believed it to be a fault with many artists that they took excessive pains and failed to realise the fact that "double diligence and overmuch curiosity is often hurtful". He was careful, however, in spite of that opinion, to keep his hand constantly in practice, as is attested by his motto—*Nulla dies sine linea*—"Be always doing something, though you do but draw a line."

This proverb is well illustrated by the famous story of his visit to Protogenes.

"To this purpose it is not impertinent to report a pretty occurrence that fell between Protogenes and him: for being very desirous to be acquainted with Protogenes, a man whom he had never seen, as also his works, whereof there went so great a name, he embarked and sailed to Rhodes where his shop was, and went directly thither. Protogenes himself was not at home, only an old woman in the house who had the keeping of a mighty large table (panel) set in a frame, and fitted ready for a picture. And when he enquired for Protogenes she answered that he was not within, and seeing him thereupon ready to depart demanded what his name was, and who it was she should tell her master had asked for him. Apelles, seeing the aforesaid table standing before him, took a pencil in his hand and drew in colour a fine and small line, saying to the woman, 'Tell thy master that he who made this line enquired for him'. And so he went his ways.

"Now when Protogenes was returned home the old woman told him of what had happened in his absence. And, as it is reported, the artist no sooner saw the draught of this small line than he knew who had been there, and said, 'Surely Apelles is come to town: for it is impossible that any but he should make in colour such fine workmanship'.

"With that he took the pencil and with another colour drew within the same line a smaller than it, instructing the woman when he went out of doors that if the party came again she should show

him what he had done and say that there was the man whom he had enquired after.

"And so it fell out indeed; for Apelles made an errand again to the shop, and seeing the second line was dismayed at first and blushed to see himself thus overcome. But taking his pencil he cut the aforesaid lines throughout the length with a third colour distinct from the rest, and left no room at all for a fourth to be drawn within it. When Protogenes saw this he confessed that he had met with his match and his master both, and made all the haste he could to the haven to seek for Apelles to bid him welcome and give him friendly entertainment.

"As a memorial it was thought good by both to leave to posterity this table thus naked, without any more work on it, to the wonder of all men and of cunning artisans and painters especially. This table was consumed to ashes in that first fire that caught Cæsar's house within the Palatine Hill. And verily we took great pleasure before that to see it many times, containing in that large and extraordinary capacity which it had nothing in the world more than some lines, so fine and small that they could hardly be discerned by the eye. And in truth, when it stood among the excellent painted tables of many other workmen it seemed a very blank, having nothing in it. Howbeit, void and naked as it was, it drew many to it even in that respect, being esteemed better than any other rich and curious work whatever." [102]

There has been some discussion as to the meaning of this trial of skill. It has been suggested that the line in question was a profile and that Protogenes drew his own profile within that of Apelles, who on the second trial drew a third between the other two with a still finer line. This conjecture seems improbable; and yet there are difficulties in thinking that the lines were drawn one within the other with greater and greater fineness. In any event it is to be interpreted as a tribute to the nicety of Greek draughtsmanship.

Two other proverbs are attributed to Apelles. One is—"Many a slip between the cup and the lip", which he illustrated by a picture of Ancæus being killed by a wild boar while in the act of drinking from a cup of wine. The other recalls the story of Molière reading his plays to his cook in order to gauge

the taste of the public, and in that way to obtain an unprejudiced criticism.

"It was also a practice with him when he had finished a work to set it forth in some open gallery or thoroughfare to be seen of folk that passed by. He himself would lie close behind it to hear what faults were found with it; preferring the judgment of the common people before his own, and imagining they would spy more narrowly and censure his doings sooner than he would himself. The story is told that a shoemaker as he went by censured his representation of the shoe or pantophle that he had painted in a picture, on the ground that there was one latchet fewer than there should be. Apelles acknowledged that the man said true, mended that fault by the next morning, and again set forth his picture as his manner was. The shoemaker coming again the morrow after and finding the want supplied which he noted the day before took some pride to himself that his admonition had sped so well, and was so bold as to cavil at somewhat about the leg. Apelles could not endure that, but putting forth his head from behind the picture said, 'Sirrah, remember you are but a shoemaker, and therefore meddle no higher, I advise you, than with shoes." This piece of advice came afterward to be a common proverb, *Ne Sutor supra crepidam.*" [103]

Animal painting was not neglected in Greece; and here again exact imitation was highly valued. A contest was held to decide the best painter of horses. Apelles suspected that the other competitors would bribe the judges in order to get the decision and therefore asked that living horses should decide the question as to which pictures were most faithful to nature.

"When he had presented before them the pictures of his concurrents' (rivals') horses one by one, they seemed not to joy nor make toward them: but no sooner had he showed (it was reported that he painted a mare) that of his own portraying, than they fell all to neigh, as taking it for one of their fellows. Which experiment served ever after for a test to know a good piece of workmanship of that kind." [104]

Painters specialised in dogs as well as horses. Protogenes, a famous animal painter, took his profession so seriously that he lived on a diet of steeped lupins for fear that the sweetness

of more attractive viands should dull his artistic sense. He concentrated his attention so closely on his work that he did not allow the siege of Rhodes (although he was painting in a little garden quite close to the camp of Demetrius) to disturb him, on the ground that the enemy had no quarrel with the arts and sciences. Demetrius in appreciation of the compliment paid him posted a guard for his additional safety and paid him frequent visits in his studio. In spite of this favourable treatment, Protogenes was not free from danger, if we are to believe the story that he painted one picture with a dagger presented to his heart and a sword ready to cut his throat. The picture in spite of these untoward circumstances did not altogether lack cheerfulness as it represented a satyr playing on a pair of bagpipes. "He gave it the title of 'Anapanomenos' (one at rest, or reposing himself): by which name, as well as by the thing itself, he wished to show that he took little thought or care during those dangerous troubles". Beside his reputation for coolness in a trying situation he is to be remembered for a lucky accident in technique, while engaged in

" the portraiture of a dog which is admirable and miraculous, not only for its art but for the accident that went in the painting thereof. For when he had done the dog in all parts to the contentment of his own mind (and that in truth was a very hard and rare matter with him) he could not satisfy and please himself in expressing the froth which fell from the dog's mouth as it panted and blowed almost windless with running. He was displeased with the very art itself; and although he thought that he had been long enough already about the said froth, and spent too much art and curiosity over it, yet something (he wist not what) needed to be diminished or altered therein, and the more workmanship and skill he added, the farther off it seemed from the truth and the nature of froth (the only mark that he shot at). When he had done all that he could, it seemed still only painted froth, and not that which came out of the dog's mouth; whereas it should have been the very same and no other, which had been there before. At this he was troubled and vexed in his mind, it being his wish to depict truth itself and not something that only bore a semblance of truth. Many a time he changed his pencil and colours and as often had wiped out that which was done,

and all to see if he could hit upon it: but it would not be, for yet it was not to his fancy. At last, falling clean out with his own workmanship, because the art might be perceived in it, in a pelting chafe he flings me the sponge-full of colours that he had wiped out full against that unhappy part of the picture which had put him to all this trouble. But see what came of it! The sponge left the colours behind in better order than he could have laid them, and, in truth, as well as his heart could wish. Thus was the froth made to his full mind, and naturally indeed by mere chance, which all the wit and cunning in his head could not reach unto.

"Following his example Neacles, another painter, did the like and sped as well in making the froth falling naturally from a horse's mouth; namely, by throwing his sponge against the picture when depicting a horse-rider cheering and chirking up his horse, yet reining him hard as he champed upon the bit.

"Thus, I say, Fortune taught Protogenes how to finish his dog. This picture of Ialysus and his dog was so well known that King Demetrius, when he might have captured the city of Rhodes on the side where Protogenes dwelt, forbear to set it on fire for fear he should burn it among other painted tables: and thus to spare a picture he lost the opportunity of winning a town." [105]

When Sir Joshua Reynolds extolled the "grand style" of painting and the choosing of noble subjects from history and mythology, he was merely echoing an ancient prejudice against what were considered low and vulgar tastes. Just as Reynolds saw no merit in the domestic tavern scenes of the Dutch painters, so Pliny regarded as inferior and base the kind of incident which Pyreicus delighted in—the shops of barbers, shoemakers, tailors, or poor asses bringing produce to market, and similar "trifling pieces" which became popular and yielded a goodly harvest.

There were also popular kinds of wall painting. Ludius excelled in pictures of manors, farms and country houses, havens, vineyards, flowers in knots, groves, hills, fishpools, rivers and other country scenes—

"In them also he would represent sundry other shows of people, some walking and going to and fro on foot; others sailing and rowing up and down stream upon the water; or else riding by land to their

farms, mounted on their mules and asses or else in wagons and coaches. There would be folk, fishing and angling in this place, hawking and fowling in that; some hunting the hare, fox, or deer both red and fallow; others busy in harvest or vintage. In this kind of painting there are fair houses to be seen standing among marshes, and roads leading to them, ticklish and full of bogs; where the paths are so slippery that women as they go are afraid to set one foot afore another; some at every step ready to slide, others bending forward with their heads, as though they carried burdens on their necks and shoulders, and all for fear lest (their feet failing under them) they should catch a fall. There were thousands of such pretty conceits as these, full of pleasure and delight. The same Ludius decorated walls in the open air with paintings of cities by the sea side. All which kind of painting pleases the eye exceedingly well, and is besides of little or no cost." [106]

A few notes are given on the technique of Greek painting. At a very early date it was the custom to mix colours with wax and apply them hot with brushes and implements similar to palette knives. This was the well-known encaustic painting. As a rule tempera, or water colour, was used. Oil was sometimes employed as a diluent. Apelles is said to have employed a "black varnish" which gave a gloss and lustre to the colours and also helped to preserve a picture from "dust and filthiness", at the same time imparting "a secret deepening and sadness to those colours which were too gay and brilliant". Sir Joshua Reynolds interpreted this as being the secret of the glazing and scrumbling of the Venetian masters.

Advocates for the use of only a few colours can quote the instances of Apelles and other excellent painters who used only four—white, yellow ochre, the red ruddle of Pontus and ordinary shoemakers' black. Afterwards many purples, or reds, were added to the palette; also indigo from India. In course of time there is evidence of an advanced study of colour. Many theories were discussed on a problem that has since so markedly affected modern art. It was felt that in landscape the effects of distance and atmosphere were highly important points to consider in the construction of a picture; and distinctions

were made between hard unsympathetic schemes of colouring and those that showed freedom and a feeling for delicacy. In many of the Pompeian paintings colour was used in surprisingly luminous schemes of yellow, light blue, pink and violet; and yet this luminosity never threatened to supersede the demand for accurate drawing. These wall decorations indicate the decorative taste that was appreciated in Italy in the first century—charming friezes in which amorini, or winged cupids, are seen pouring wine out of jars almost as large as themselves, driving in horse races, posing as young chemists, weighing the ingredients of prescriptions in scales and pounding them in mortars. Festoons, baskets of flowers and fruit, bright-coloured birds formed running patterns across the walls, alternated with designs of satyrs dancing on slack ropes. Central panels contained the fashionable "classical subjects" of which the most common were Ariadne swimming on a dolphin, Perseus freeing Andromeda, Theseus victorious over the Minotaur, Apollo and Daphne, Medea before the murder of her children, and similar tragic scenes. Also there were the typical grotesque pictures in which contests with centaurs occurred; fish, birds, still-life subjects, nymphs cutting off the beard of a satyr, funeral portraits and landscapes in which the most common incident is a temple set by a sacred tree.

By good fortune there has been preserved a copy in mosaic, about five feet broad, of the "Battle of Alexander", the picture painted by Philoxenos for King Cassander which Pliny speaks of as unsurpassed for exquisite art. Darius is seen flying from the battlefield in his chariot, having just witnessed the death of one of his bodyguard, thrust through the body by Alexander who stands confronting the Persian king. Also, the well-known "Medea" at Pompeii can be traced to Timomachus the Byzantine who, according to Pliny, painted a companion "Ajax", both of which pictures, he says, were hung in the temple of Venus Genetrix at Rome.

There is no mention of women painters in the early days, and probably none were known in Greece. Rome and Naples, however, could claim some excellent "Paintresses":

"Amongst them was Timarete, the daughter of Nicon, who made that excellent picture of Diana at Ephesus, a most antique picture. Also Irene, the daughter of Cratinus the painter, learned under her father and drew the picture of a young damsel which is at Eleusine, a Calypso, a picture of an old man, and other paintings. And Marcus Varro tells us that when he was a young man there was at Rome a paintress by name Læla, who passed her whole life in virginity and was exceedingly skilful in painting with the pencil and also in enamelling with hot steel in ivory. Her delight was principally in drawing women, and there is at Naples a large picture by her of an Old Woman and also one of herself at a mirror or looking-glass. It was said that no painter had a quicker hand or went faster away with his work than she did, and her works fetched higher prices than those of Sopolis and Dionysius, the most famous painters of the day." [107]

CHAPTER XV

Of Sculptors

THE ancient world was flooded with images, large and small. The numbers congregated in Rome itself were so considerable that, Pliny says, they "obscured and darkened the city." The Baths alone, a building of ample proportions, was crowned with as many as three hundred statues, in metal and marble; and we have already seen how plentifully supplied was the theatre of Scaurus. Indeed the appetite for statuary was in danger of becoming a disease. Gardens contained colonnades sheltering avenues of images, and the outlying gardens were guarded by stone effigies, as if by so many sentries posted on duty against invisible intruders. In the public places would be placed an occasional Colossus—the kind of monument of the great man of whom Shakespeare said, "We petty men walk under his huge legs and peep about".

It is not altogether easy to account for a craze which was so strongly condemned under the Jewish law, condemned also by the Early Christian Fathers, as well as under the rule of Islam. These interdicts pointed to the danger of the encouragement of superstition. Pliny admits that the satyrs and figures of Venus placed in the gardens were meant as "keepers and remedies against envy and witchcraft". The gods were openly worshipped in realistic form, and the fame of Phidias' statue in gold and ivory was due to the intense religious feeling which it excited. Nor was the personal desire to leave a memorial any less potent an incentive, as was proved by the carrying of figures and busts of ancestors at the Roman funerals by the surviving members of the family. Then again the custom of placing figures of memorable authors in libraries was dictated by the same material suggestions of immortality.

"I must not pass over one new device and invention come up of late, namely, to dedicate and set up in libraries the statues in gold and silver, or at least in brass, of those divine and heavenly men, whose immortal spirits do speak still, and ever shall, in those places where their books are. And although it be impossible to recover the true and lively portraits of many of them, yet we forbear not for all that to devise some image to represent their face and person, though we are sure it is nothing like them: and the want thereof kindles in us a great desire and longing to know what kind of visage it might be indeed which was never delivered unto us: as it appears by the statue of Homer. Certainly, in my opinion, there can be no greater argument of the felicity and happiness of any man than to have all the world evermore desirous to know, What kind of person he was while he lived?" [108]

In tracing the origin of lifelike images in bronze, the precedent seems to be that of winners at the Greek Games who were presented with their statues if they won an event three times—an honour which finds a parallel in the rules governing the winning outright of many modern challenge trophies.

"In old time they did not give the actual likeness in brass unless they were such worthy persons as deserved to be immortalised; such as for winning the prizes at any of the four sacred games held in Greece, principally those of Olympia where it was an ordinary thing to see the statues of those who had achieved any victory there. But in the case of any one fortunate enough to obtain victory at those solemnities three several times, his statue in brass was so lively and perfectly cast, that it resembled his person full and whole, according to every joint and muscle of the body, yea, even to his hair of head and beard." [109]

Whether it is correct or not to assign the origin of statues from the life to the winners at the Greek Games, it is certainly true that the gods were all depicted as expressing the ideal of physical beauty which it was the object of Greek athleticism to cultivate. But the custom soon spread to statues of distinguished public men which were dotted about cities much in the same way that they are now, the figures being represented either in togas, or nude, or riding in chariots, on on horseback.

"The Athenians used to honour men of singular virtue and valour by representing their personages in brass, but I am not sure whether those Athenians were the first to bring up that manner or no. It is true that long ago they caused the statues of Harmodius and Aristogiton to be made of brass at the charges of the state and to be erected in a public place, because they had courage to kill Pisistratus who tyrannised over them; and this fell out in that very year in which the kings were also deposed at Rome and expelled from the city for ever. In process of time this manner was taken up in all parts of the world, so plausible to the nature of man is the ambitious desire to perpetuate their memory by such monuments: so much so that there is not a good town within our provinces but they have begun already to beautify their market places with many such ornaments of brazen statues and images, with titles, honours and dignities engraved on the bases, that posterity might be informed by such inscriptions as well as by their tombs and sepulchres.

"In ancient times all the Statues were in their gowns and robes. Men also admired them naked, resting on their spears which they held in their hands. This pattern came from the Greeks, resembling their young men who exercise in their public wrestling-places, called Gymnasia. Indeed it is the Greek fashion to hide no part of the body but to show all, whereas the Romans (like soldiers and military men), used to make their statues armed with a cuirass or breast-plate only, leaving the rest of the body discovered and bare. Julius Cæsar was well content that his image should be set up in the Forum armed with an habargeon, or coat of mail. As for the statue of L. Actius, a famous Poet, I will report to you what writers have recorded; that being himself a little man and low of stature, he caused his image to be made exceeding big and tall and to be set up thus in the temple of the Muses at Rome. As for the statues represented on horseback they were in great repute among the Romans, but no doubt they had their precedent from the Greeks. At first they honoured in this way such horsemen as had won the prize on horseback in the race at the sacred games held in Greece. Afterwards those who had excelled the best at the chariot races obtained the same honour whether drawn with two horses or four. From this came the custom with our valiant captains and victorious generals to have their statues made riding triumphant in their chariots." [110]

A still higher distinction was for the effigy to be mounted on a pillar in the manner of our own Nelson and Duke of York. The reason for such a lofty station is not far to seek:

"Statues erected upon columns or pillars are of great antiquity. P. Minutius obtained the honour; for being purveyor-general of corn for the city during a dearth he behaved himself so well in that office that this statue of brass was erected upon a pillar outside the city by a universal contribution of the people who gave voluntarily towards the charges thereof, every man to the value of an ounce of brass coin. As for the statue of Horatius Cocles which remains to this day, there was another reason for it and one of greater credit and importance; for he alone sustaining the whole charge and brunt of King Porsena's army made good the wooden bridge over the Tiber at Rome and caused the enemy to abandon the place. Now if a man is desirous to know the reason of these columns and pillars, it was to signify that such persons were now advanced and lifted up above all other mortal men; which also is meant by the triumphal arches, a new invention and devised only of late days; yet it, like all other such honourable testimonies, began first with the Greeks."

[111]

Cato when he was Censor had a strong objection to statues of Roman ladies being set up in public. His protests against this pride and vainglory, however, were unavailing and one illustrious and blameless example was that of Cornelia, the daughter of Scipio Africanus, and distinguished mother of the two Gracchi. She was represented sitting down, and it is pointed out that by some oversight her shoes were unlaced.

The alternative of statues on pillars was to make them of colossal size. Of these several stood in Rome—of Apollo in the Capitol, of Jupiter in Mars field, and of Hercules at Tarentum.

Nero was an eager imitator of the stupendous and ordered Zenodorus, who had made an enormous Mercury at Auvergne in France, to cast a colossus of himself. But he died before it was finished and the people so detested his memory that the statue was dedicated to the Sun instead. Pliny says that he had himself visited Zenodorus's workshop and seen the clay moulds prepared for the casting.

Nero had no better fortune with a painting on canvas on the same magnificent scale:

"The Emperor commanded that a portrait of himself should be painted on linen cloth, after the manner of a giantlike colossus, 120 feet high, a thing that never had been heard or seen before.

"But see what came of it! When this monstrous picture (which was drawn and made in the garden of Marius) was done and finished, the lightning and fire from heaven caught it, and not only consumed it but also burnt the best part of the building about the garden." [112]

There were Lilliputian images, too, sometimes emphasised by being held in the hand of a life-size or larger figure. Thus Theodorus, who made the Labyrinth at Samos, was represented with a file in his right hand

"and in his left he holds (with three fingers) a little pretty coach with four horses, which afterwards was taken from the rest and sent to Praeneste. Both the coach and the team of horses and the coachmen were couched in so small a space that a little fly (which he also made with it) covered it all with her pretty wings." [113]

The collecting of works of art became a passion with the wealthy Romans. One favourite outlet for this enthusiasm was the small bronzes which went by the name of "Corinthian brass", to which Horace refers. Many examples of this old work were recovered at the time of the Renaissance and successfully imitated. Owners loved to carry these pieces about with them wherever they went. Nero was never without a favourite statuette of an Amazon; Alexander the Great also always had with him four metal figures to support his tent on his campaigns. We gain an idea of the range of this class of workmanship from the following account:

"Of the workmanship of Polycletus was the brazen image representing one scraping and rubbing himself in the bath or hothouse; as also another all naked and challenging to the dice. The proper and special gift he had above all other was the art of making images stand on one leg; and yet Varro says that all his images are foursquare and all after one pattern.

"As for Lysippus of Sicyon, Duris says that he learned the art by

himself and was taught by no other. But Tullus states that he was an apprentice to it and having been at first by occupation only a poor tinker or a plain coppersmith at the most, he began to take heart and proceed further by an answer that Eupompus the painter gave him. For when he asked this painter's counsel as to whom he should follow as a pattern of all the workmen who had gone before him, he pointed to a crowd of people and said that he would do best to imitate Nature herself and no one artificer. He proved in the end so excellent a workman that he left behind him the most pieces of any man, of all sorts and fullest of art and good workmanship; and among the rest an image of a man currying, rubbing and scraping the sweat and filth off his own body, which M. Agrippa caused to be set before his own baths; and the Emperor Tiberius Cæsar took so much pleasure in it that, notwithstanding at his first coming to the crown he knew well enough how to command his own affections, yet he could not now rule himself, but must needs have this image removed to his own bed-chamber and another set in the place of it. At this the common people (see their contumacy and frowardness!) were so much offended that they rested not with open mouth to exclaim upon him in all their Theatres and cried to have their Apoxyomenos set again in the old place, insomuch that the Emperor was obliged to restore it, although he loved it so well. This Lysippus also won greater credit by another image representing a woman, drunk, piping or playing on a flute; also by a kennel of hounds together with the huntsman and all belonging to the game. The person of King Alexander the Great he likewise expressed in brass, beginning at the prince's childhood. The Emperor Nero was so greatly enamoured of one image of Alexander that he had it gilded all over. But afterwards, seeing that the greater the value bestowed upon it by laying on gold the less was the art of it seen (so that it lost all its former beauty and grace) he caused the gold to be taken off again. And indeed the image thus ungilded seemed far more precious than it was when it stood so enriched with gold in spite of all the hacks, cuts, gashes and rases all over the body where the gold did stick and was still to be seen." [114]

It was natural to enquire how the art of modelling the figure came about. The answer is supplied in a charming love story.

"It is said that Dibutades, a Sicyonian and a Potter, was the first to make an image in the same clay as that of which he made his pots.

This was on the occasion of his daughter being in love with a young man, and whenever he was to take a long journey away from home she used to mark on the wall the shadow of her lover's face by candle light so that she might still enjoy his visage in his absence. Her father seeing this followed these lines and by clapping clay on the surface made a face in relief which he then put into the furnace to bake among his other vessels, and when it was hardened showed it abroad. It is said that this very piece remained safe in the baths of Corinth until Mummius destroyed the city." [115]

Then, again, Lysistratus of Sicyon was said to be the first to take a plaster cast of a man's face. This is of interest because it gives a clue to the naturalistic feeling which characterised Greek art. It is said that when Lysistratus had taken an impression in wax from the plaster case, he "used to fashion the same more exactly"; in other words, he would add the necessary finishing touches to make the model attractive. From this it appears that he was the first master of faithful portraiture because people said he alone made true likenesses of his model, whereas "before him every man studied only to make the fairest faces and never considered whether they were like or no."

It is clear at any rate that the Greek sculptors—Praxiteles is cited as an example—always worked from clay models. There is little doubt, too, that drapery stiffened with wet clay was sometimes laid over the models and that from this the sculptor worked; a technique which accounts for the gracefully clinging robes beneath which the beautiful lines of the figure are visible.

Still-life was also executed in clay—clusters of grapes and fishes, so lifelike, we are told, that anyone looking at them could scarcely tell them from real grapes and fishes. Successful imitation was admired as the very essence of art.

To show how the Earth itself was to be held in the highest honour, images of all the gods were ordered to be made of clay only. The Jupiter in the Capitol was made by a potter and coloured all over with vermilion.[1] The chariots with four

[1] These curious forms of colouration are significant. The predilection for painting the figure red as a manifestation of power and triumph was frequently exhibited by

horses which stood on the lantern of the temple were also of the same material.

"In these days, notwithstanding the infinite wealth and riches we have grown unto, in all our divine service and solemn sacrifices there is no libation or taste made to the gods out of Chalcedony or crystal bowls but only in earthen cups. If a man consider these things aright he will find the bounty and the goodness of the Earth to be inerrable. Even omitting the benefits she has bestowed upon mankind in yielding us so many sorts of corn, wine, apples and suchlike fruits, herbs, shrubs, bushes, trees, medicinable drugs, metals and minerals, how beneficial is the Earth to us in these works of pottery which we are glutted with (they are so usual and ordinary) in yielding us conduit-pipes to convey water to our baths, tiles flat yet hooked and made with crochets at one end to hang upon the sides of the roof, champfered to lie in gutters to shoot off water, curbed for crests to clasp the ridge on both sides, bricks to lie in walls, to say nothing of the vessels that are turned with the wheel and made round; yea and great tuns and pipes of earth devised to contain wine and water; results, all of them, of an art which induced King Numa to make a seventh fraternity, or Company of Potters." [116]

The fact that silver and gold vessels were not used in the service of the gods, but only pottery (up to the date, at least, of the conquest of Asia), illustrates the prejudice which existed amongst the most conservative Romans against anything which appeared to be a tampering with nature. There was something felt to be repugnant even in quarrying marble, in disfiguring the mountains, and violating the earth's surface by digging for metals—not so much from a sense of the spoliation of beauty, as in showing a lack of decent respect for Dame Nature. We are reminded of similar protests of Wordsworth and Ruskin against the monstrous railroads gashing the

victorious Roman generals. (Possibly the phrase, "to paint the town red", points to a similar mode of differentiating appearances to mark a special occasion.) Certainly, as Herodotus says, the Libyans liked to show off with red instead of black skins; and ancient Britons evidently with their wood stain preferred as full dress a tone approximating to black rather than that natural to a white man.

Also in the *Apocrypha* we find—"Then he giveth it the semblance of the image of a man, smearing it with vermilion, and with paint colouring it red."

countryside. Pliny urged the plea on behalf of the mountains which nature framed to strengthen the joints of the earth, to tame the violence of the rivers and break the force of the sea. It was not mere sentimentalism on his part, but a dislike of luxury and innovation, whatever form it might take.

"We build ships for the transport of our marble. They carry the cliffs and tops of high hills to and fro amid the waves and billows of the sea; and never fear the danger of that most fell and cruel element; indeed we surpass the madness and vanity of those who search as high as the clouds for a cup (for they held Crystal to be a kind of ice) in order that we may have the satisfaction of drinking our water cold.

"Now let every man think of the excessive prices of these monstrous pieces and masses of stone he sees carried by land and sea. Let him consider how much happier a life many a man would have without all this; for what use, or pleasure rather, is there except to lie in beds and chambers of stones that forsooth are spotted, just as if they never considered how the darkness of the night bereaves the one half of each man's life of these delights and joys?

"Indeed, when I ponder and weigh these things in my mind I must needs think great shame and impute a great fault to our forefathers that lived long since, and blush in their behalf. Laws were enacted and prohibitions published by the Censors, forbidding that certain parts of a Boar's neck, or Dormice, should be served up at great feasts, and yet there has been no act or statute ordained to restrain the bringing in of marble, or of sailing into foreign parts to search for the same." [117]

Marble in itself was a beautiful material, and the world was rich in the many varieties. Most of them were spotted. The green marble from Lacedæmon was more gay and pleasant than any other. Serpentine marble was called Ophites because the specks in it resembled those in a serpent's skin, while Augustan marble was marked with veins curved like the waves of the sea. Of a kind of Basault, reckoned to be a marble, Vespasian dedicated in his temple of Peace a statue representing the River Nile, with sixteen little children playing about it. A column of Lucullan black marble was erected before the house of Scaurus of such an immense weight that he had to

give security against any damage done to the sewers while it was being conveyed through the city.

Pillars of variegated marble, it is of interest to note, were at first used in temples not for show, but simply for strength. In fact, marble was thought little of in the earliest days and only later was it slit into thin plates, with which to cover walls as a decoration. Pliny quotes Homer and also a presumably witty remark of Cicero to prove his point:

"Even in Homer's time a difference was made between ordinary stone and marble: for this Poet says plainly, that Paris caught a rap upon the mouth with a marble stone. And yet whenever he describes the most stately palaces of kings and princes, he never makes mention of any other material to adorn them than Brass, Gold, Electrum, Silver, and Ivory, and not one word of Marble. But, as I take it, the first time that these marbles of sundry spots and colours were discovered was in the quarries of the Islanders of Chios, when they digged for stone to fortify their city with walls; whereupon M. Cicero played merrily upon them with a pleasant conceit. For when they showed every one that came, and among the rest to him, the walls they had built of marble, seeming to take great pride in their sumptuous and magnificent building, Cicero remarked: 'What ado is here! I should have marvelled much more at your wall, if you had built it out of the quarry of Tyburtum'—meaning, of ordinary stone." [118]

The kind of marble favoured by the sculptors was the white marble of Paros—"Lychnites, or candle marble"—so called because it was hewn out of the rock by candlelight in underground galleries.

The later preference for unsullied white statuary is a comparatively modern taste. Egyptian, Greek, Chinese and Gothic sculptures were all painted. That Greek statuary was painted —the flesh in pink or buff, and the hair and drapery and other parts in appropriate tones—is proved by a passage in which Pliny describes the use of Punic wax. This wax was of the finest possible quality, prepared after long bleaching in the sun; and it is expressly stated that it was used "in treating marble figures to make them brilliant". That is to say, the marble

was first tinted, possibly with a milk medium, and then covered with a wax varnish, in which gum and resin may have been incorporated, to preserve and intensify the effect. In the Acropolis Museum there is a roomful of statues which show many traces of this colouring and the impression created when they stood in their full glory must have been inspiriting and realistic. Terra-cotta figures were first painted with white and then delicately toned.

To set beside the story of the daughter of Dibutades, the potter, who wished to retain a sketch of her absent lover is another to account for the beginning of statuary in the round. It appears that one of the first attempts was a caricature which had unhappy results:

"It is recorded that the Poet, Hipponax, had a passing foul and ill-favoured face of his own; and Bupalus and Anthermus could find not better sport than to counterfeit both him and his visage as lively as possible in stone. By way of a joke they set up the same in an open place where merry youths met in knots together, and so they proposed him as a laughing stock to the whole world. Hipponax could not endure this indignity, and to be revenged upon these companions sharpened his style or pen against them and cursed them with such bitter rhymes and biting libels that, as some believe, being weary of their lives, they knit their necks in halters and so hanged themselves. [119]

If the story is to be taken seriously, it may be a reference to the earliest styles which were too archaic in character to appeal to the lovers of the naturalistic schools of classical sculpture. It is conceivable that Pliny, had he seen the sculpture of the South Sea Islanders, would have refused to accept it seriously, but rather as the kind of buffoonery of which the repentant Bupalus and Anthermus were guilty.

Greek sculpture reached its highest point with Phidias, beyond all question the greatest all-round genius that Greece produced. He was admittedly the greatest sculptor in stone and marble; his Jupiter Olympius, resplendent in gold and ivory, was one of the seven wonders of the world. Also his statue of

Minerva,[1] which stood in the Parthenon, twenty-six cubits high, was made of ivory and gold. In addition to being a painter, he was the first to practise and teach the art of chasing and embossing metal. Of this work the finest example was held to be the shield held by the Goddess Minerva.

"On its embossed and swelling compass he engraved the battle in which the Amazons were defeated by Theseus; and on the hollow part and concavity he enchased the conflict between the Gods and the Giants. Upon the shoes or pantofles she is wearing he portrayed the fight between the Lapithæ and the Centaurs; so full compact of art was everything about her and so curiously and artificially contrived. To the story chased upon the base or pedestal under the statue he gave the name of the Birth of Pandora; and there are standing by her the gods to the number of thirty. Amongst them the goddess Victory is of most admirable workmanship, and artists who are skillful in these matters greatly admire the fell serpent and also the monster Sphinx made in brass, under the spear that Minerva holds in her hand." [120]

It appears that a shield of Minerva which he painted in colour rivalled in merit the one he made of brass. Statues "in cloaks and mantles" were attributed to him; also a naked colossus, or giant. Finally, he supervised the building of the Parthenon, the wonderful temple which crowned the Acropolis.

Praxiteles, who ranks after Phidias, was chiefly noted for the Venus of Cnidos, which made the city famous.

"His works are to be seen at Athens, in that conspicuous street called Ceramicum: but of all the images that ever were made (I say not by Praxiteles only, but by all the workmen that were in the world) his Venus which he wrought for the people of Cnidos is the best. It was so exquisite and singular that many a man embarked and sailed to Cnidos for no other business but to see and behold it. He made two of them, one with a veil and arrayed decently in apparel, which the men of Cos bought; for being put to their choice, they, like honest men, preferred it to the other which was naked (notwithstanding that Praxiteles tendered them both at one and the

[1] An interesting point is mentioned by Herodotus that the dress in the statues of Minerva was taken from the garments of the Libyan women which were made of leather with fringes of leather thongs instead of serpents.

same price). The statue which they rejected the Cnidians bargained for, and indeed (to speak of workmanship) it was infinitely better, and there was no comparison between them in the general opinion. Indeed King Nicomedes would gladly have bought it of the Cnidians, and offered them enough; for he offered to discharge all debts that their city was engaged in, which were very great sums. But they would not hearken unto him, being content to live in debt, yea and to abide and endure any forfeitures, exegents, executions, and extents whatsoever rather than part with their Venus. And to speak the truth, they had good reason to do so, for that one image of Praxiteles was their chief credit; it ennobled their city, and drew resort from all parts thither.

"This Venus was shrined in a little chapel by herself within a tabernacle, so devised that it could be seen from every point of view; an arrangement with which the goddess herself (as men were verily persuaded) was well enough pleased, and showed her contentment therein to all comers. For look upon her as one would, she was amiable and admirable every way." [121]

His work in metal was almost as famous as his "cutting of marble".

"For there are most beautiful cast images of brass that he made, to wit, the ravishing of Proserpina by Pluto; a Spinster spinning: the image of drunkenness: god Bacchus attended with one of the Satyrs, a noble piece of work which for the great bruit that went of it the Greeks surnamed Periboetos (much famed). He also made the goddess Venus which was melted when the chapel in which she stood was burnt (during the reign of Claudius Cæsar), an exquisite piece of work, comparable to his Venus in marble which all the world speaks so much of. He portrayed also in brass a woman making chaplets of flowers which goes by the name of Stephusa; a carrier of flagons or wine pots; and a foul old trot and a nasty, bearing the title of Spilumene. Furthermore, he cast in brass a youth lying in wait with an arrow to kill a Lizard which was ready to creep close to him and to sting." [122]

The works of Praxiteles to be seen at Rome included statues of Good Adventure and Good Fortune; the religious women of the order of Bacchus, called the furious Mænades; and the holy nuns or votaries called the Caryatides.

Scopas was a still more versatile artist. He was represented at Rome by the images of Venus, Pothos and Phaeton "honoured in every ceremonious devotion as right only saints"; also by an Apollo on the Palatine and the fairy goddess Vesta, sitting in a chair attended by two handmaids in the Gardens of Servilius.

Of a more secular character were

"his images in the chapel of Cneus Domitius, within the Circus of Flaminius; to wit, Neptune himself, dame Thetis, and her son Achilles; the Sea-nymphs or Mermaids called Nereids, mounted upon Dolphins, Whales, and mighty Sea-horses called Hippocampi; moreover, the Sea-trumpeters Tritons, with all the choir and train attending upon Sir Phorcus a Sea-god, and the mighty fishes called Pristes, besides many other monsters of the sea; all wrought by one and the same hand so curiously, that if he had sitten about the making of them all his life-time and done nothing else, one would have thought it work enough, and a good deed." [123]

Other works at Rome attributed either to Scopas or Praxiteles were dame Niobe ready to die together with all her sweet children, and an image of Cupid holding a thunderbolt or lightning in his hand, ready to shoot. This Cupid was supposed to be a likeness of Alcibiades, accounted the handsomest youth of his day.

Pliny ends his account of sculpture with a few curiosities which are worth quoting. One artist, Pasiteles, born in Magna Graecia, was made a Roman citizen in recognition of his great skill, especially for an ivory image of Jupiter. He was less happy, however, with animals.

"It so happened that being one day about the Arsenal, where there were some wild beasts newly brought out of Africa, he looked in through the bars of a cage to behold a lion, and make a counterfeit of him. But as he was engraving in stone according to the pattern, behold, out of another cage a panther broke loose, to no small danger of that most curious and painful workman. It is said that he made many works, but it is not precisely set down which were of his doing.

"M. Varro also highly extols Arcesilaus, of whose handiwork he says that he had a lioness in marble, and certain Winged Cupids playing with her; some seeming to hold her fast bound, others forcing her to drink out of a horn, others again seeming to shoe her with their socks; and all this pretty antic-work was of one entire stone.

"Moreover, I cannot conceal from you one pretty thing to be observed, which we all know to be true, that in one chapel of Jupiter all the pictures therein, as also all the ceremonial service belonging thereto, are respective altogether to the feminine sex and bear reference to the worship of a goddess. This happened at first by mere chance, but was continued afterwards. For when the temple of Juno was finished, the porters who had the carriage of the images intended to stand there mistook their marks and carried thither those which were appointed for the chapel of Jupiter; and contrariwise those for Juno, into the chapel of Jupiter. Which being once done was not altered again, but taken for a presage and religiously kept ever afterwards; as if the gods themselves had so ordered and appointed it and made an exchange. This is the reason also why in the aforesaid chapel of Juno there is observed the kind of service which was meant for Jupiter.

"To conclude, there have been certain workmen that have grown to great fame by cutting and graving in minute pieces of marble. Myrmecides, for example, carved in marble a chariot with four horses, and a man to drive the same, in so small a space that a poor fly might cover all with her little wings. As for Callicrates, he cut in stone the similitude and proportion of ants in so narrow a compass that it was almost impossible to see the feet and other parts of the body." [124]

Pliny does not omit a word of commendation for the unknown artist whose fame has by some accident of fortune been overlooked, probably because others who were better known have worked with him. The statue of the Laocoon and the decorations of the Pantheon are instances of this neglect.

"Moreover, there were many cunning workmen whose fame is obscured, because although many singular pieces and those most unmatchable have passed through their hands, yet the number of those who have joined in the workmanship together has been a check and bar to the fame of each; for there is no one among them

that can take the whole of the credit, nor can many together very well be named. This may be seen in the image of Laocoon, which remains within the palace of Emperor Titus, a piece of work to be preferred (no doubt) before all pictures or cast images; and yet we do not know which one artificer to praise for it. Agesander, Polydorus, and Athenodorus, Rhodians, all most excellent workmen, agreed to express lively in one entire stone Laocoon himself, his children, and the wonderful intricate winding of the serpents clasping and knitting them about. In the same way a man will see the houses Palatine of the Cæsars fully furnished with right excellent statues, which a number of sculptors wrought together.

"As for the temple called Pantheon, which Agrippa built, Diogenes of Athens enriched it with marble images. The Virgins, going under the name of Caryatides, erected upon the chapters of the columns in that temple are commended as masterpieces for workmanship. The other images also which are placed on the very top of the lantern of the foresaid temple are thought to be excellent pieces; but as they stand so high and cannot well be discerned, there is less speech of them." [125]

CHAPTER XVI

Of Architecture and the Seven Wonders

THE greatest marvels executed by the hand of man have been associated with such permanent memorials as buildings, monuments and statues. The "Seven Wonders of the World" were picked out from the famous examples of architecture as the most likely to live for ever. The list included the Temple of Diana in Ephesus; the sepulchre of Mausolus; the Colossus of the Sun at Rhodes; the statue of Jupiter Olympius; the Hanging Gardens of Babylon, which were largely architectural; the Egyptian Pyramids; and the obelisk of Semiramis.

Examples of Roman architecture were omitted from the list as being too recent to be ranked at such a high level. Yet some of the Roman buildings attained to almost equal celebrity; such as the Golden Palace of Nero, which extended from the Palatine to the Esquiline hill. Pliny was greatly concerned with the waste of land involved in this estate, and laments the fact that so much ground was monopolised by the Emperors while the war-veterans received such scant consideration—

"Twice in our time we have seen the whole pourprise of Rome taken up to make the palaces of two Emperors, C. Caligula and Nero. As for that of Nero (that nothing might be wanting of superfluity in the highest degree) he caused it to be all gilded, and it was called The Golden Palace.

"Why, those noble Romans who were the founders of our Empire, who went from the very Plough-tail or else out of their country cabins to manage the wars, to achieve brave feats of arms, to conquer mighty nations and to return in triumph to the city—such, I say, had not as much free land in the whole world as would serve for one of the cellars of these Prodigals!" [126]

Then there were at Rome the Baths, built on a scale of great dignity and impressiveness. The style set the model for the future public buildings of Europe, a classic tradition that remains one of the chief glories of Rome. Unfortunately Pliny makes no mention of the Coliseum which was completed in the year after his death. We are told that the façade of the Baths was crowned with three-hundred statues, some of brass and others of marble, and supported by 400 marble pillars. It contained 700 storage tanks and 105 conduits yielding water at cocks and spouts. There were, in all, 170 baths and "stoves in which people of all sorts and degrees might bathe and sweat free of cost and not pay a denier". And that, Pliny says, was only a beginning.

The water supply of Rome needed a stupendous effort in the construction of aqueducts, sewers and baths. Fourteen aqueducts supplied Rome with three hundred millions of gallons of water daily. The sewers that were constructed allowed seven rivers to meet under the city in one main channel and sweep everything before them into the Tiber. The work was carried out under conditions of forced labour. As an engineering feat alone, it was remarkable that the masonry was able to resist the pressure caused by sudden floods; for

"then the rivers shake the paving under them and reverberate against the sides of the walls about them. Sometimes also they receive the Tiber water into them when he rises extraordinarily, and then you will see the stream of two contrary waters affront and charge one another with great force and violence within under the ground. Yet for all this these water works yield not a jot but abide firm and fast without any sensible decay occasioned by it. Moreover, these streams often carry down huge and heavy pieces of stone within them and mighty loads are drawn over them continually, yet these arched conduits do not settle under the one or are shaken with the other. Many a house falls down of itself and the ruins beat against these vaults, to say nothing of the fires and terrible earthquakes which shake the whole earth about them: yet for all these injuries they have continued almost eight hundred years inexpugnable.

"Here, by the way, I will not conceal from you a circumstance which even the best and most renowned Chroniclers have passed

over in silence. When King Tarquinius caused these vaults underground to be made and forced the common people to labour hard thereat with their own hands, it happened that many a good Roman citizen, overtoiled in this kind of work, chose rather to kill themselves to be rid of this irksome and painful life. So that daily there were people missing and their bodies found after they had perished. The king, therefore, to prevent farther mischief and to provide that the work begun might be brought to an end, devised a remedy, which was never invented before nor practised afterwards, that the bodies of as many as were thus found dead should be hung upon gibbets, exposed not only to the view of their fellow-citizens to be despised as cursed creatures but also to the wild and ravenous fowls of the air to be torn and devoured. The Romans (as they are the only nation under heaven impatient of any dishonour) seeing this object presented before their eyes were mightily abashed. And as this mind of theirs had gained them victory many a time in desperate battles, so also it now guided and directed them; and being (as they were) dismayed at this disgrace they reckoned to be no less ashamed at such an ignominy after they were dead than now to be made to blush while still alive." [127]

Another marvel of the ancient world which might well have been included as an eighth wonder was the Labyrinth. The description is just as involved as the subject would seem to require:

"We can truly say that these Labyrinths are the most monstrous works ever devised by the hand of man. They are not fabulous, as peradventure it might be supposed; for one of them remains to this day in the jurisdiction of Heracleopolites which was the first ever made, 3,600 years ago, by a king named Petesuccas, or as some think, Tithoes. Herodotus[1] says it was the work of many kings, one after another, and that Psammetichus was the last that put his hand to it and made an end thereof. The reason that moved these princes to make this Labyrinth is not resolved by writers, but diverse causes are alleged by them. The greater part are of opinion that it was an edifice dedicated expressly to the Sun, which in my opinion comes nearest to the truth. Certainly there is no doubt that Dæ-

[1] This Labyrinth (of Lake Moeris) Herodotus said he had himself visited and found that it exceeded all the walls and great works of the Greeks put together for labour or expense.

dalus took this for the model of the Labyrinth he made in Crete; though he expressed not above the hundredth part of it, choosing only that corner of the Labyrinth which contains a number of ways and passages, meeting and encountering one another, winding and turning in and out every way, after so intricate manner and so inexplicable that, when a man is once in, he cannot possibly get out again. Nor must we think that these turnings and returnings were after the manner of mazes which are drawn upon the pavement and the plain floor of a field, such as we commonly see making sport and pastime among boys, that is to say, a narrow promenade which may comprehend many miles; but here were many doors contrived, which might trouble and confound the memory, for seeing such variety of entries, alleys, and ways, some crossed and encountered, others flanked on either hand, a man wandered still and knew not whether he went forward or backward, nor in truth where he was. This Labyrinth in Crete is counted the second to that of Egypt. The third is in the Isle of Lemnos. The fourth is in Italy: and all were made of polished stone, and vaulted overhead with arches.

To describe the site and plot, to unfold the architecture of the whole, and to rehearse every particular is not possible; for the building is divided into sixteen regions or quarters, according to the sixteen several governments in Egypt (which they call Nomes) and within each are vast and stately palaces which bear the names of the said jurisdiction. Also within the precinct are the temples of all the Egyptian gods, and fifteen little chapels or shrines, each enclosing a Nemesis, to which goddess they are all dedicated: to say nothing of many Pyramids forty ells in height apiece, every one of them having six walls at the foot; so that before a man comes to the Labyrinth which is so intricate and inexplicable, and in which (as I said before) he is sure to lose himself, he is sure to be weary and tired out, for he has still to pass over certain lofts, galleries and garrets, all of them so high that he must climb stairs of ninety steps apiece ere he can land at them. Within these are a number of columns and statues, all of porphyry or red marble, a world of images and statues representing gods as well as men, besides an infinite number of other statues portrayed in monstrous and ugly shapes.

"What shall I say of other rooms and lodgings which are framed and situated in such a manner that no sooner are the doors and gates opened which lead to them than a man hears fearful cracks of terrible

thunder? Furthermore, the passages from place to place are as dark as pitch, so that there is no going through them without fire light: and still we are short of the Labyrinth, for without the main wall there are two other mighty buildings they call Ptera (wings); and when you have passed them, you meet with more shrowds under the ground, like caves and countermines vaulted overhead, and as dark as dungeons.

"The Labyrinth in Lemnos was similar, only more admirable in this respect, that it had a hundred and forty columns of marble more than the other, all wrought round by the turner's craft with such dexterity that a child could wield the wheel that turned them, the pins and poles by which they hung were so nicely poised.

"It is proper that I should write something also of our Labyrinth here in Italy, which Porsena K. of Tuscany caused to be made for his own sepulchre; and the rather, that you should know that vain as foreign kings were in expenses, our princes in Italy surpassed them in vanity. As there are so many tales and fables of it that are incredible, I shall quote the words of my author M. Varro. King Porseus (quoth he) was interred under the city Clusinum in Tuscany, in the very place he had left a sumptuous monument or tomb built of square stone. Within the base or foot he made a Labyrinth so intricate, that if a man had entered without a bottom or clue of thread in his hand, and leaving the one end thereof fastened to the entry or door, it was impossible for him to find the way out again. Upon this quadrant stood five Pyramids or steeples, four at the corners, and one in the midst. These grew sharp spires toward the top, so contrived that they all met in one great roundle of brass which covered them all in manner of a cap, the same rising up in the midst with a crest most stately. From this cover there hung round about by little chains a number of bells or cymbals, which, shaken with the wind, made a jangling noise that might be heard a great way off, very much like the ring of bells which was devised in times past over the temple of Jupiter at Dodona. And yet we are not come to an end of this building mounted aloft in the air; for this cover overhead served but for a foundation of four other Pyramids, and every one of them rose a hundred foot high above the other work. Upon the tops of them was still one terrace more to sustain five Pyramids, and these shot up to such a monstrous height that Varro was ashamed to report it. If we give credit to the tales that are current in Tuscany it was equal to the whole building underneath. Oh the

outrageous madness of a foolish prince, seeking thus in a vain-glorious mind to be immortalised by a superfluous expense which could bring no good to any creature, and actually weakened the state of his kingdom! And when all was done, the artificer that enterprised and finished the work repeated the greater part of the praise and glory!" [128]

Of the famous Seven Wonders of the World the first was the Temple of Diana at Ephesus, familiar for the riot stirred up against St. Paul by the image-makers who feared for the welfare of their industry. One remarkable feature of this temple was that it was built not on a rock, but on a marsh, to avoid the shock of earthquakes. The first course was of charcoal well rammed, in the manner of a pavement, and on this was laid a bed of wool-packs. The temple was 425 by 220 feet at the base and had 127 pillars, made by as many kings, all curiously wrought and engraved.

"Chersiphron, the famous architect, was the chief designer or master of the works and he undertook (after the frame was made) the rearing of them. The greatest wonder of all was this, how those huge chapters of pillars together with their friezes and architraves, after being raised so high, should be fitted to the sockets of their shafts. But, so it is said, he compassed this enterprise and brought it to effect by means of bags or sacks filled with sand. For of these he made a soft bed, as it were, raised above the head of the pillars, upon which bed rested the chapters; and as he emptied the nethermost, the chapters settled downward little by little and so at his pleasure he could place them where they should stand. But the greatest difficulty was with the frontispiece and main lintel-tree which lay over the jambs or cheeks of the great door of the temple; for it was so huge and mighty that it could not be brought to lie level with the jambs which formed its bed. At this Chersiphron was much perplexed in his mind and so weary of his life that he purposed to make away with himself. But as he lay in bed and fell asleep wearied out with these dumpish and desperate cogitations, the goddess Diana (in whose honour this temple was framed and now at the point to be reared) appeared to him, willing him to be of good cheer, and to resolve to live still, assuring him that she herself had laid the stone of the frontispiece and couched it

accordingly. This indeed appeared true on the morrow morning, for it seemed that the very weight of it had caused it to settle into its place and make a joint as Chersiphron would have wished it." [129]

Another interesting point is the wood used in the construction of the temple; and especially with regard to the statue of the Goddess Diana, which was said to have been made of ebony. This may throw some light on a remark of Pliny that some of the gods had black faces.

"It is commonly thought that Box, Ebony, Cypress and Cedar wood are everlasting and will never be done. A proof was to be seen in that famous temple of Diana in Ephesus, for all Asia lent a helping hand to that work, which they brought to an end and finished in four years and not before. The beams, rafters and spars that went to the making of the roof were of Cedar. As to the statue of the goddess Diana it is not so certainly known of what wood it was. All the writers report that it was of Ebony, except Mutianus, thrice Consul of Rome, and one of the last to have seen it; he affirms that it was made of Vine wood and that although the temple was ruined and rebuilt no less than seven times, yet the image was unchanged. He says, moreover, that Canetias chose that wood for the best and even mentions the workman who cut and carved it, which makes me marvel, considering that by his own account this image was of greater antiquity than that of Lady Minerva, much more than of Prince Bacchus. He adds that this statue was embalmed within with precious oil of Spikenard which was distilled into it at many holes. By means of this medicinable liquor the wood was nourished and the joints held close and fast together. As to the leaves of the doors belonging to this temple they were, he says, of Cypress wood, and they continue still fresh and new to the eye notwithstanding it is well near four hundred years since they were made. This, by the way, is to be noted that these doors stood four years glued in the clave (key). And verily this wood was chosen for that purpose because among other properties the Cypress alone has this gift, to look always shining and polished and never lose its gloss and beauty." [130]

The Mausoleum, or tomb of Mausolus, King of Caria, was erected by his widow Artemisia at Halicarnassus, a monument

63 feet long from North to South and rather less in width, with a circuit of 411 feet. It was 25 cubits high with 36 columns surrounding it. Four distinguished sculptors, including Scopas, each took charge of one side.

"There was a fifth workman also who took part; for above the side wall or wing of the tomb there was a Pyramid erected, which from the battlements of the wall was carried to the height of the building below. It grew smaller as the work rose higher, and from that height at every step (there were four-and-twenty in all) was narrowed and taken in, until at last it ended in a pointed broch. On the top there is pitched a coach with four horses wrought curiously in marble, and this was the work of Pythis for his part. So that reckoning this chariot with the sharp spire, the Pyramid under it unto the battlements, and the body of the sepulchre founded upon the firm ground, the whole work arose to an hundred and forty foot in height." [131]

The Colossus of Rhodes was a giant image of the Sun in bronze, made by Chares of Lyndus, 75 cubits high.

"Well, mighty image as it was it did not stand on end more than sixty-six years, for in an earthquake that then happened it was over thrown. Lying as it does on the ground it is a wonderful and prodigious thing to view, for first and foremost the thumbs of the hand and great toes of the foot are so big that few men clasp them in their arms. The fingers and toes are bigger than the most part of other whole statues and images and where any of the members or limbs were broken with the fall, a man seeing them would say they were broad holes and huge caves in the ground, for within these fractures and breaches you will see monstrous big stones which the workman at the first rearing and setting of it had couched within to strengthen the colossus, so that standing firm and upright it might check the violence of wind and weather. Twelve years (they say) Chares was in making of it before he could fully finish it, and the bare workmanship cost 300 talents. There are other images of the nature of colosses in the same city of Rhodes to the number of one hundred, less indeed than the Colossus of the Sun, but for bigness sufficient to give a name to the place and ennoble it wherever it should stand." [132]

The fragments remained on the ground for nine hundred

years because they were held to be sacred. Finally they were removed by Muavius, said to have been a Mahometan caliph, for the value of the brass; and, as one of the inevitable coincidences of history, it was said that it needed exactly the number of camels to complete the removal as the number of the years during which the statue had remained in ruins.

From all accounts the Hanging Gardens of Babylon were roof gardens on a colossal scale, built on high arches and watered from the Euphrates. They seem to have had a connection with a vast sacrificial mound, on the top of which the priests as they sacrificed would be visible to the multitude—a "high place" planted with groves of trees. Voltaire pictured these gardens as forests of palm and trees laden with oranges, lemons, cloves, and cinnamon raised high above the ground, growing in twelve feet of earth which rested on thick sheets of lead, with thousands of cascades and fountains completing a design not unlike that of Versailles. Voltaire was romancing; but there was prevalent in the East a taste for remarkable and lofty park-like gardens, raised artificially. The Green Mount of Kublai Khan with a lake in the place where the earth had been excavated might be taken as an example.

The statue of Zeus at Olympia, made by Phidias of ivory and gold, was said to represent the god, according to Homer's description, in every detail and therefore to express in the highest possible degree the embodiment of Greek religious feeling both in beauty and majesty. Cicero held it to be the most perfect of all statues and other writers testified to the emotion created by it in the hearts of those who stood and gazed at this truly god-like image.

Lastly, we come to the Pyramids and obelisks of Egypt which Pliny must have seen when he visited the country. Apparently he did not recognise the real motive of the pyramids and ascribed them merely to the foolish vainglory of the kings; for he says they so abounded in wealth that they did not know what to do with their money except to spend it in such idle and needless vanities. The main motive he believes to have been a remedy for unemployment and at the same time

a means of avoiding the inconvenience of leaving too much treasure to the heirs, which might only tempt them to treasonable practices. 366,000 men were kept at work for twenty years over the largest of the pyramids; and three of them took 78 years and 4 months in the making. 1,800 talents alone were laid out in radishes, garlic and onions for the workers during the time of building.

"And yet with all these huge monuments, there remain no signs of any houses built, no appearance of frames and engines requisite for such monstrous buildings. There is nothing to be seen far and near except fair sand and small red gravel, much like Lentil seed. A man seeing everything so clean and even would wonder how they came there. But the greatest difficulty and marvel is this: what means were used to carry so high as well as such mighty masses of hewn squared stone, as the filling, rubbish and mortar that went there? Some say that mounts of salt and nitre were heaped up together higher and higher as the work arose and was brought up; when it was finished, these mounts were demolished and washed away by the inundation of the River Nile. Others think that there were bridges reared with bricks made of clay, which after the work was brought to an end were employed in building private houses. For they hold that the Nile, lying at such a low level even when it is at its highest, could never reach to wash away the heaps and mounds aforesaid.

"Within the greatest Pyramid there is a pit 86 cubits deep, and thither (some think) the river was let in. The method of measuring the height of these Pyramids was invented by Thales of Miletus; namely, by taking the length of the shadow when it is equal in length to the body that casts it." [133]

The obelisks are described as red granite "beams" consecrated to the sun. The Egyptian name implied the resemblance to sunbeams. The rivalry of the Kings led to a severe competition in the matter of the dimensions of these imposing landmarks. Rameses appears to have made a final and desperate effort to eclipse all previous records:

"He pitched on end another Obelisk, 129 cubits in height, but of prodigious thickness, the sides being no less than eleven cubits in

breadth. It is said that Rameses kept twenty thousand men employed on this Obelisk and that the king himself, when it was about to be reared on end, fearing that the engines devised to raise it, and keep the head steady between heaven and earth, might fail and not be able to bear that monstrous weight, caused his own son to be bound to the top of it in order that the safety of the young prince might induce them to be more heedful to preserve the stone. Indeed, this Obelisk was so admirable a piece of work that when King Cambyses took the city where it stood by assault, and put it to the fire and sword, having burnt everything as far as the foundation and underpinning of the Obelisk, he commanded expressly to quench the fire, and in a kind of reverence unto a mass and pile of stone spared it." [134]

A difficulty was found in transporting the largest of these obelisks to Rome, especially between the banks of the River Tiber. Augustus set one of them in the Circus, 125 feet 9 inches high, and another 9 feet shorter, in Mars field. On these, it was said, all the philosophy and religion of the Egyptians was engraved, "containing the whole interpretation of Nature". An obelisk that was used as a sundial to mark the hour of noon, for some unknown reason got out of truth, and Pliny suggests three possible explanations for the error. It might have been due to an earthquake or subsidence in the ground; or possibly the more remote contingency of the earth having moved from the true centre of the universe; and the third and most daring speculation was that the universe itself might have shifted, which gives us a hint of that very modern and complicated theory, an expanding universe.

CHAPTER XVII

Of the Universe

THE second book of the *Natural History* contains "the discourse of the World of celestial impressions and meteors"—in other words, a complete treatise on astronomy. On such a vast subject we naturally glance first of all at Pliny's authorities and notice that the list of his own countrymen is undistinguished except for the indispensable Varro, unless we have underrated the ability of the Emperor Tiberius, whose reputation as an astronomer has been lost to posterity.

The Greek list is naturally a formidable one. To take a few names at random there are Plato, Hipparchus, the Pythagoreans, Anaximander, Euclid, Democritus, Archimedes, Eratosthenes, Herodotus, Aristotle, Ctesias.

This list could scarely claim to be comprehensive; but it conveys a sufficient variety of ideas concerning the constitution of the universe to render Pliny's explanations intelligible. We might with advantage examine the opinions of a few of the authorities cited and notice what use is made of them.

Anaximander, for instance, was a disciple of Thales, one of the earliest of the Greek astronomers. He considered the origin of everything to be a kind of primitive matter, which we could only perceive by means of our senses when it was resolved into fire, water and other elements. Heat and cold were opposites, which brought about the consistency of the heavenly bodies. Lightning and thunder occurred when fire attempted to escape through the air contained in the clouds—an idea not unlike a very recent theory that the action of cosmic rays is a contributing cause of thunderstorms.

He believed that all the heavenly bodies were of a cylindrical shape, flat on both sides like a lozenge, not round—a peculiarity that enabled them to float. The idea of the rotation of these bodies was not yet evolved, as we may judge from the Egyptians who regarded the stars and planets as sailing in a vast armada. The earth being of this convenient shape could float easily on a fluid which contained the germ of things—a great breeding ground on the same lines as the ocean. He also made a shrewd guess very close to the evolutionary theory, that the first creatures were produced in moisture and were covered with a spiny integument—a suggestion that has a curious and relevant application to the armour-plated covering of prehistoric fishes. In course of time, he added, they reached dry land as animals—again anticipating a sound evolutionary process. He even went so far as to hazard the suspicion that man himself originally resembled a fish.

With the Pythagoreans we touch on more metaphysical ground. Number was the essence of all things, and from this was derived the idea of the harmonious action of the heavenly bodies. Pythagoras was the first to declare the earth to be a sphere—a sphere for logical reasons, because it was the most beautiful and harmonious of all solid figures. The universe was, in fact, living and intelligent as well as spherical. The school which Pythagoras founded went a step further and recognised that the earth was not central and immovable, but —a highly important admission—behaved in the same way as the planets, being constantly in motion, and rotating. Thus there was a daily rotation of sun, moon and planets from east to west recognised, while the fixed stars moved much more slowly.

To this harmonious movement was assigned a harmony in sound—a remarkable conception based on the idea that the universe sings like an orchestra while the planets, sun and moon all revolve to their particular notes and rhythm. In this sense the universe was an instrument of God, tuned to the scale of the Heptacord Music. Numbers thus formed the highest expression in the universe. The divine melody, however, of the

celestial choir was inaudible to mortal ears, too gross to rise to these exalted heights.

Democritus contributed an alternative theory of the universe, which was frankly materialistic. He thus differed from his predecessors who believed in one great organising, omniscient force, grouping the elements of matter according to their affinities. He was the first of the Atomists, so-called because they advanced the doctrine that atoms or "bodies" falling into the void came together and so formed worlds. For these theories Democritus incurred the deep displeasure of mediæval theologians, and was consigned on this account by Dante to a suitable place in hell.

Finally we come to Aristotle, the greatest influence of all, revered by Pliny as a master whose word was well nigh infallible. He held that of the four elements (earth, fire, water and air) earth was the heaviest and therefore tended to go downwards, while fire ascended, and air and water hovered somewhere between.

But beside these material elements there was a fifth of an infinite and divine nature—the æther filling the uppermost space of all. The stars were formed of æther. At a lower level lay the terrestrial elements, between the moon and the earth, always striving with one another and creating continual transformations.

One other name demands attention, that of Eratosthenes, the learned librarian of Alexandria who came later, about 250 B.C. He guessed with an almost uncanny instinct—possibly an inference from astronomical observations—that a ship sailing westward from Spain along the same latitude would ultimately arrive at India.

Euclid and Archimedes also belonged to the Alexandrian school of the same period. As an inventor of machinery, Archimedes is famous for his startling boast: "Give me but a place to stand on and I will move the earth."

We may now be in a position to consider Pliny's own attitude to the earth and the universe, and to notice how he attempts to reconcile previous conflicting ideas. He agrees

that the earth is more or less round—the perfect shape for a suspended body in space—but the difficulty presents itself as to what happens to the inhabitants on the lower side. Why did *they* not fall off, while *we* managed to keep our footing "on the top of the world"? Pliny very aptly remarks that those dwelling in the antipodes might be equally perplexed to account for the reason why we in our turn keep our footing. A modern rhyme suitably states the problem:

"Whatever should we do,
If underfoot were blue,
And all the world were upside down,
And overhead were green and brown?"

But it is better for Pliny to state the problem in his own words:

"The first and principal thing that offers itself to be considered is the figure of the Earth, in which by a general consent we all agree. For we speak of the round ball of the earth and confess that it is a globe enclosed within two poles. Yet the form is not of a perfect and absolute roundel, considering such a great height of hills and such plains of downs. But if the compass were taken by lines, the ends of those lines would meet exactly in circuit and prove the figure of a just circle. The heaven bends and inclines toward the centre, but the earth goes from the centre, while the world with continual volubility and turning about drives the huge and excessive globe into the form of a round ball.

"There is much ado and great debate between learned men and contrariwise between those of the lewd and ignorant multitude, for they hold that men are spread over all parts of the earth and stand one against another, foot to foot, so that the Zenith or point of the Heavens is even and alike unto all; in whatever part they are they tread after the same manner on the middle of the earth. But the common sort ask the question, How it happens that the people opposite just against us do not fall off into Heaven? As if there were not a question also ready whether those on the opposite side should marvel why we fall not down. Now there is a reason, carrying a probability even to the multitude, that on an uneven and unequal globe of the Earth, with many ascents and degrees (as if the figure resembled a Pineapple) it may be well enough inhabited all

over in every place. But what good does all this do, when another wonder as great as it arises, namely, that the globe itself hangs and yet does not fall together with us? As if the power of that Spirit especially which is enclosed in the World were doubted: or that anything could fall, especially when Nature is repugnant thereto and affords no place whither to fall."[1] [135]

In the absence of the understanding of the Law of Gravity, Pliny falls back on the plea that it would be repugnant to the workmanlike instinct of Nature, that great and infallible power, if any untoward disaster were to happen. That Nature had kindly provided us with stability and a firm balance was all that he was able to say positively. There is even a hint that the uneven surface of the earth, especially when the heights of the mountains are taken into account, provide us with a kind of foothold. If the surface were as smooth as glass, who could deny that we too might be liable to slip off into space?

In other respects, the ancient idea of the universe is clear enough. It is an elaboration of Isaiah's conception of "the heavens stretched out as a curtain and a tent to dwell in".[2] The roof of the "tent" is imprinted with the portraits of living creatures, the signs of the Zodiac—a Bear or a Bull, and so on. This is Pliny's view. He says that the surface of the vault is encrusted with stars, which gives a rough surface—"not smooth and slick all over, polished as we see in birds' eggs". It was also from this canopy that the seeds of all things living

[1] One would imagine that Mandeville was thinking of this passage when he wrote the following very involved statement: "But how it seemeth to simple men unlearned, that men may not go under the earth, and also that men should fall towards the heaven from under. But that may not be, upon less than we may fall toward heaven from the earth where we be. For from what part of the earth that men dwell, either above or beneath, it seemeth always to them that dwell that they go more right than any other folk. And right as it seemeth to us that they be under us, right so it seemeth to them that we be under them. For if a man might fall from the earth unto the firmament, by greater reason the earth and the sea that be so great and so heavy should fall to the firmament: but that may not be, and therefore saith our Lord God, *Non timeas me, qui suspendi terram ex nihilo?*" This quotation shows how complex and inexplicable seemed a problem that presents so little difficulty to us ever since the fall of an apple inspired Sir Isaac Newton with a tenable theory.

[2] Another example of the connection between religious imagery and astronomical science occurs in *Revelations*, where four angels stood "on the four corners of the earth, holding the four winds of the earth"—signifying that the earth was both flat and square, while the corners represented the outermost boundaries.

fell, principally into that great breeding ground, the ocean. Thus we see, according to Pliny, and also according to Genesis, the theory of special creation stated, that in the world are created all manner of strange shapes derived from the heavens above.

In the *Merchant of Venice* there is the same idea of the heavens incrusted with stars:

> "Sit Jessica. Look, how the floor of heaven
> Is thick inlaid with patines of bright gold:
> There's not the smallest orb which thou behold'st
> But in his motion like an angel sings,
> Still quivering to the young-eyed cherubims,—
> Such harmony is in immortal souls;
> But whilst the muddy vesture of decay
> Doth grossly close it in, we cannot hear it."

Here is the well-known Pythagorean theory restated of the 'music of the spheres".[1] The scale was worked out in different series of tones by different scientists, the scale most favoured by Pliny being that which made the interval between the earth and the sun a fifth, with one tone between the earth and the moon, which recorded the lowest of all.

"The evidence of our eyesight approves that the form of heaven is round, in the fashion of an absolute and perfect globe, because whichever way you look, it seems to bend downward showing a just Hemisphere. The ordinary rising and setting of the sun also has left it clear that the World thus framed turns round about in a continual and incessant circuit in the space of four-and-twenty hours. Now I cannot so easily resolve and pronounce whether the sound of so huge a frame (because the heaven is in height infinite), while it is being whirled about and never rests in that revolution, cannot be heard with our ears. No more can I vouch for the singing of the stars as they are driven about and roll with all their spheres: or determine that the heaven, as it moves, represents indeed a

[1] Music as an essential part of devotion is seen to be an idea of long-standing. In the music of the spheres was embodied the highest expression of art, and Plato regarded the harmony of sound as in itself a philosophy. This accounts for the linking up of religious ceremony with the loftiest musical expression.

pleasant and incredibly sweet harmony both day and night, although to us who are within it seems to pass in silence."[1] [136]

Between earth and heaven, according to the ancient plan, hung the seven planets. Of these the sun was the greatest, the ruler not only of the stars but of heaven itself. The sun was the soul of the whole world, giving light, alternately hiding and revealing the stars, ordering the seasons and clearing away the dark mists and cloudiness of men's minds.

In Babylon the moon was a greater favourite than the sun, for the reason that it had a softer illumination and less damaging powers of heat. Pliny admits the moon's charm and attraction and mentions that Endymion was the first to fall a victim. Yet she is variable, always growing or else waning, bending "pointwise into tips of horns", at other times divided just in half, or shining full. She can be spotted and dark (the spots being the dregs of earth caught up among the vapours) or else exceeding bright. "Also she is very active in her course, sometimes below, sometimes aloft, mounted high in the North or cast down below in the South, up in the zenith or ready to touch the mountains."

Then there were the moon's eclipses, in which the recovery of the moon from the troubles that assailed her was assisted by a din of trumpets and a clattering of basins.

"The first Roman that divulged the reason of the eclipses of the Sun and Moon was Sulpitius Gallus who was afterwards Consul. But at that time, being a Colonel he was brought out by the General the day before King Perseus was vanquished by Paulus into open audience before the whole host to foretell the eclipse which would happen the next morning. Whereby he delivered the army from all pensiveness and fear which might have troubled them in the time of

[1] This sense of a whirling motion, accompanied, as it might be, by an inaudible music, has been well expressed in *Far from the Madding Crowd*:

"To persons standing alone on a hill during a clear midnight, the roll of the world eastward is almost a palpable movement. The sensation may be caused by the panoramic glide of the stars past earthly objects, which is perceptible in a few minutes of stillness. But whatever be its origin, the impression of riding along is vivid and abiding. After such a nocturnal reconnoitre it is hard to get back to earth and to believe that the consciousness of such majestic speeding is derived from a tiny human frame."

battle; and within a while after he compiled also a book thereof. Among the Greeks, Thales Milesius was the first who found it out and did prognosticate and foreshadow the Sun's eclipse that happened in the 170th year after the foundation of the city of Rome. After them Hipparchus compiled his Ephemerides, containing the courses and aspects of both these planets for six hundred years ensuing, no less assuredly than if he had been privy to Nature's counsels. These were doubtless great and excellent persons who above the reach of all capacity of mortal men found out the reason of the course of such mighty stars and divine powers. And whereas the silly mind of men was before set and to seek, fearing in these eclipses of the stars some great wrong and violence or death of the planets, he reassured them in that matter. As for the Moon, mortal men imagine that by magic sorcery and charms she is enchanted; they therefore help her in such a case when she is eclipsed by dissonant ringing of basins. In this fearful fit also of an eclipse Nicias, the General of the Athenians, feared to set sail with his fleet out of the haven, and so greatly endangered and distressed the state of his country." [137]

The reference to Hipparchus is correctly stated, for not only did he predict eclipses but calculated the lunar month to within less than a second of the present accepted figures—an amazing feat of precision. He also made a catalogue of 850 stars; and it was thanks to the positions of Sirius and other fixed stars recorded by him that Halley in 1718 was able to make his discovery that the fixed stars were not as fixed as had previously been imagined.

The reason given for the different colours of the planets is ingenious. The varying tones depended on their distance from the earth, since they took their colour from the particular atmosphere they happened to be in. Saturn was white and excessively cold, Mars red, hot and fiery, Jupiter clear and temperate. The comets were the most fearful and terrifying apparitions of all; some with bloody hairs, rough and shaggy all over with a kind of mane; others glittering like a sword, or swift as a spear or dart. At the battle of Salamis a comet appeared resembling a horn; and tragic events were generally

understood to be heralded by "stars with trains of fire, dews of blood, disasters in the sun".

"Some of the comets move like wandering planets; others are fixed fast and stir not. All in manner are seen under the North star called Charl le maigne's wain: some in no certain part thereof, but mostly in that white, which has taken the name of the Milk circle. Aristotle says that many are seen together: a thing that no man but he, so far as I can learn, has found out. Marry, boisterous winds and much heat of weather are foretold by them. A terrible one was seen of the people in Ethiopia and Egypt which the king who reigned in that age names Typhon. It resembled fire and was platted or twisted in manner of a wreath, grim and hideous to look on; and no more truly to be counted a star than a kind of knot of fire.

"A fearful star for the most part is this kind of Comet, and not easily expiated; as appeared by the late civil troubles when Octavius was Consul and also a second time by the intestine war of Pompey and Cæsar. In our own days, about the time that Claudius Cæsar was poisoned and left the Empire to Domitius Nero, there was another continually visible and always terrible. Men are of the opinion that it is material for prophecy to observe into what quarters it shoots, or what star's power and influence it receives; also what things it resembles and in what parts it shines and first arises. For if it is like flutes and hautboys it portends something to Musicians. It is respective to fine wits and learned men if it put forth a triangular or foursquare figure with even angles. And it is thought to presage, yea, and to sprinkle and put forth poison, if it be seen in the head of the Dragon, either North or South.

"In only one place of the whole world, namely in a temple at Rome is a Comet worshipped and adored: even the one which was judged by Augustus Cæsar of happy memory to be very lucky and fortunate to him[1]; for, when it began to appear, he gave attendance in person as overseer to the plays and games which he made to Venus Genetrix not long after the death of his father Cæsar, in the

[1] Comets had also been significant of imperial misfortune. Plutarch mentions the great comet "which shone very bright for seven nights after Cæsar's death, and then disappeared, and the dimness of the sun, whose orb continued pale and dull for the whole of that year, never showing its ordinary radiance at its rising, and giving but a weak and feeble heat." Altogether this particular year proved most unseasonable; the air continued damp and the fruits never properly ripened—to prove conclusively that Cæsar's murder was unpleasing to the gods.

college instituted and erected by him. In an inward joy to himself he interpreted that this Comet was made for him and that he himself was born in it. And verily, if we will confess a truth, it was a healthful, good and happy presage to the whole world."[1] [138]

Of all the stars the Dog star was the most dreaded and sinister. His habit was to rise at the hottest time of the year and to bring disasters in his train. The sea then raged excessively, the wines in cellars were troubled, pools and standing waters moved strangely, and dogs were very apt to run mad.

The moon, on the other hand, had an extremely stimulating and excellent effect on the growth of living creatures, especially on oysters and other shell fish. Rats and mice showed by their anatomy the age of the moon; ants ceased working when the moon was changing. It was evident, too, that the supply of blood was regulated in some way by the moon; and in this connection it is of interest to note that it was a custom for centuries after to bleed a person strictly in accordance with the tides. Leaves of trees, and plants generally, were also strongly influenced. The Moon was the feminine plant, the Sun the masculine. The sun sucked up the humidity of the earth, and its fiery power in evaporating the sea had the effect of making it bitter and salt. "As the Sun is fed by the salt seas, so the

[1] Aristotle held that there were two kinds of comets—one a kind of fiery vapour given off from the earth in the sublunary regions, the other derived from the exhalations from a planet or fixed star. In either case they were slowly burning bodies, generally associated with long periods of winds or droughts. He speaks of an occasion when a meteoric stone "fell from the air at Aegospotami and was caught up by a wind and hurled down in the course of a day; and at that time also a comet appeared from the beginning of the evening. Again, at the time of the great comet the winter was dry and arctic, and the tidal wave was caused by the clashing of contrary winds; for in the bay the north wind prevailed, while outside it a strong south wind blew. Further, during the archonship of Nicomachus at Athens a comet was seen for a few days in the neighbourhood of the equinoctial circle; it was at the time of this comet, which did not rise with the beginning of the evening that the great gale at Corinth occurred."

The views about comets held by Aristotle held good up to the time of Newton. Seneca, however, argued against these very uncertain and volatile origins, pointing out that if comets were caused by the occurrence of winds and vapours, they would disappear very quickly, whereas the fact was otherwise; they generally lasted for months on end. What was more remarkable still, Seneca anticipated modern science by hazarding the shrewd conjecture that comets had orbits of their own. He confessed that he looked forward to the day when future astronomers might be trusted to prove the fact, which they have successfully done.

Moon is nourished by the fresh river waters"—an idea that may have suggested the tastes of Jack Sprat and his wife, if we are to believe the deep esoteric meanings of nursery rhymes.

The elements which in Pliny's view made up the physical creation were air, earth, water and fire. Here he follows Aristotle. Lightnings proceeded from the three planets, Saturn, Jupiter and Mars. From them also came the kindred phenomena of earthquakes, assisted by the winds. Fire was the most remarkable of all the elements, in that it was capable of increasing indefinitely in volume from the feeblest spark. There were fires in the stars, in men's bodies, in some stones such as flints, also in certain woods when rubbed against one another. Strangest of all was the fire in the clouds from which lightning originated. The wonder, Pliny says, was that everything in the universe did not catch fire. "Surely it exceeds all miracles that one day should pass without all the world being set alight." The flames seen about men's bodies were portents of great significance. Fire shone out of the head of Servius Tullius as he lay asleep when a child; and L. Martius was so inspired when he exhorted his soldiers to avenge the death of the two Scipios that his head was illuminated like a flaming fire.

But in spite of all these terrifying portents the earth has proved a true and great benefactress to us all—

"To her, for her singular benefits, we have given the reverent and worshipful name of Mother. For as the Heaven is the mother of God, even so is she of man. She it is that takes us when we are coming into the world, nourishes us when we are newborn; and when we are come abroad ever sustains and bears us up. At the last when we are rejected and forlorn of the world, she embraces us. Then, like a kind mother, she coveres us over in her bosom. She is sacred to us, inasmuch as she renders us sacred, even bearing our tombs, monuments and titles, continuing our name and extending our memory, thereby to make recompense and weigh against the shortness of our age. We in our anger wish to be heavy unto our enemy, and yet she is heavy to none, as if we were ignorant that she alone is never angry with any man. She is bountiful, mild,

tender over us and indulgent, ready at all times to attend and wait upon the good of mortal men. See what she breeds being forced! Nay, what she yields of her own accord! What odoriferous smells and pleasant savours! What wholesome juices and liquors, what soft things to content our feeling, what lovely colours she gives to please our eye, how faithfully and justly she repays with usury that which was lent and credited to her!

"She brings forth medicinal herbs and is evermore in travail to be delivered of something or other that is good for man. Over and besides, for very pity of us she ordained and appointed some poisons that when we were weary of our life cursed famine should not consume and waste us with languishing and pining consumption and so procure our death; that high and steep rocks should not dash and crush our bodies in pieces; nor the overthwart and preposterous punishment by the halter wreath our necks and stop that vital breath which we seek to let out and be rid of. Last of all, that we might not work our own death in the deep sea, and, being drowned, feed fishes and be buried in their bellies, nor yet that the edge and point of the sword cut and pierce our body and so put us to dolorous pain, she has in a pitiful regard and companion of us engendered that poison, by one gentle draught of which, going most easily down, we might forgo our life.

"And what is Man's answer for all the blessings that the good Earth has bestowed upon him? Has it not been that Nature has been exploited to the utmost, dishonoured instead of receiving respect?

"How many luxuries and how many insults does she not bear for us! With iron tools, with wood, fire, stone, burdens of corn she is tormented every hour; and all this much more to content our pleasures and wanton delights than to serve us with natural food and necessary nourishment. What she abides in her outward skin might seem in some sort tolerable; but we, not satisfied therewith, pierce deeper and enter into her very bowels; we search into the veins of gold and silver; we mine and dig for copper and lead metals. To seek out gems and some little stones we strike pits deep within the ground. Thus we pluck the very heart-strings out of her, and all to wear on our finger one gem or precious stone, to fulfil our pleasure and desire. How many hands are worn with digging and delving that one joint of our finger may shine again! Surely, if there were any devils or infernal spirits beneath, ere this time these mines must have brought them up above ground. Marvel we then

if she has brought forth some hurtful and noisome things? I well think that savage beasts ward and save her; and keep sacrilegious hands from doing her injury. Do we not dig amongst dragons and serpents, and together with veins of gold do we not handle the roots of poisoned and venomous herbs? But we find this goddess the better appeased and less discontented for all this misusage, because the end and issue of all this wealth tends to wickedness, to murder and wars; and her whom we drench with our blood we cover also with unburied bones, which, as if she reproved and reproached us for this rage and fury of ours, she herself covers in the end and hides close, even the wicked parts of mortal men."

[139]

The system of the universe was, in the main, beneficent, although subject to the vicissitudes which come from such interferences as tempests, winds, rain, hail, frost, snow and thunderstorms. When science was in its infancy and combined with philosophy, everything observed on the earth and in the air and sky was embraced by the word "meteor". Now meteor is reduced to the shooting stars roaming through space or survives in the title of the Meteorological Office, which issues the weather warnings.

All that Pliny could do was to set out a series of pictures of the way in which the weather phenomena presented themselves to the imaginations of his predecessors. But he does not ignore the weather lore of the peasants and farmers. Many of these prognostications are still accepted as reliable forecasts:

"Brute and dumb creatures presage and give warning what weather there will be. To begin with, the fishes of the Sea: the dolphins playing and disporting themselves in a calm water certainly fore-show wind coming from that coast whence they fetch these frisks and gambols. On the other hand, if they fling and dash water this way and that, the sea being rough and troubled, it is an infallible sign of a calm and of fair weather toward. The Cuttle launching itself and flying above the water; the Winkles sticking hard to the gravel; the Sea-urchins thrusting themselves into the mud are all signs of tempests near. The like may be said of Frogs when they cry more than their custom is; and of Seamews also when they gaggle in a morning extraordinarily; likewise the Cor-

morants, Gulls, Mallards and Ducks, when they keep a-preening of their feathers with their bills, foreshow wind; and generally when you see other water-fowl gather and then combat one with another. Ravens crying as if they sobbed and hiccupped therewith, at the same time clapping themselves with their wings, do portend winds. Jackdaws, if it be late ere they return from abroad, foretoken cold and hard weather: so do the white-birds when they assemble and flock together, as also when land-fowl (and the crow especially) keep a-crying against the water, clapping their wings, washing also and bathing themselves. If the swallow fly low and so near the water that she flaps the same often with her wings, it is a sign of rain and foul weather. Similarly, if Geese hold on a continual gaggling out of all order untunably, or birds that nestle in trees seem to make many flights out but return quickly again to their nests, or the heron stands sad and moping on the sands, a man may make a certain guess.

"The sheep and such small cattle, leaping and playing wantonly, do testify some change of weather; as also the dull and heavy oxen holding up their nose and muzzles, snuff and smell into the air, yea and keep a-licking against the hair. Also when you see the foul and filthy hogs rend, tear and fling about them bottles (bundles) of hay and yet care not for it when they have done; likewise if you perceive the ants lying close and idle against their nature, or earthworms come forth and appear, a man may be bold to foretell a change in the weather." [140]

Winds were very difficult and uncertain things to account for. They were regarded as restless, wandering spirits—at one time repressed, at another active, and at all times liable to be dangerous. They had strange habitations of their own, such as the bottom of the sea from which the South wind rose. Then there were caves and holes in the ground which bred winds continually. In Dalmatia a deep chasm was known into which anything thrown, however calm the day might be, would provoke a stormy tempest "like a whirlpuff" (rather on the principle of a box filled with smoke which, when it is tapped, emits smoke rings through a hole).[1] The idea of the

[1] An illustration recently appeared in *The Times* of a great blowhole in the Nillarbor Plain in South Australia "through which the wind rushes like the sighing of a giant". It showed a handkerchief held over the opening in the ground being blown skyward by the force of the wind.

winds being imprisoned and suddenly getting loose correspond almost exactly with the description in *Martin Chuzzlewit*, of "the boisterous rover hurrying away rejoicing, roaring over moor and meadow, hill and flat, until it got out to sea, where it met with other winds similarly disposed, and made a night of it".

And Hotspur in *Henry IV* puts Pliny's theory still more exactly:

> "Oft the teeming earth
> Is with a kind of colic pincht and vext
> By the imprisoning of unruly wind
> Within her womb; which, for enlargement striving,
> Shakes the old beldam earth, and topples down
> Steeples and moss-grown towers."

Milton, in *Lycidas*, puts the question why Edward King was drowned and gets the following reply—

> "And sage Hippotades their answer brings
> That not a blast was from his dungeons strayed."

Each wind was known by its particular character. Homer, the earliest recognised scientific authority, only spoke of four. "Now", says Pliny, "every quarter of the world has two winds apiece." The chief of these were Boreas, the coldest, which blew from the North Pole and engendered snow and hail; Notus, the South Wind, hot and troublesome, especially when it was dry and apt to take away the appetite; Zephyrus the mild West wind; Kaikas the greedy North-east; and Eurus the uncertain South-east.

Whirlwinds and waterspouts were sudden blasts, liable to do great damage.

"When they come with a greater force, sway and violence, and burst withal and cleave a dry cloud asunder, they breed a storm which is named Typhon. But if the cleft or breach is not great, so that the wind is constrained to turn round, to roll and whirl in his descent, without fire (that is to say, lightning), it makes a whirlpuff or gust called Typhon. This takes with it a piece broken out of a congealed cold cloud, turning, winding and rolling it round and changes from place to place with a vehement and sudden whirling. This is the greatest danger and mischief that poor sailors have at

sea, breaking not only their cross-sailyards but also writhing and bursting in pieces the very ships; and yet a small matter is the remedy for it, namely, the casting of vinegar out against it as it comes, which is of a nature most cold." [141]

The usual tradition about vinegar was that it was able to extinguish fire. This is in accordance with its reputation for coldness. One would have expected oil to be mentioned instead of vinegar, especially as Pliny tells us that pearl divers used oil in rough weather to calm a heavy sea.

Thunder and lightning gave rise to a number of different theories. The most ingenious was a suggestion taken from the analogy of a red-hot iron as it makes a hissing noise when thrust into water. Storms were bred when a cloud was cloven in two, or burst asunder. Then sometimes a thunderbolt would fly out. The sound of thunder was due to the blows and thumps given by the fires beating on the clouds. These repeated blows caused "the fiery chinks and rifts of those clouds immediately to glitter and shine. Likewise it may be that the same wind or spirit is set on fire by fretting and rubbing as it passes violently headlong down. It may also be stricken by the conflict of two clouds, as if two stones hit one against another; and so the leames and flashes sparkle forth". The guess as to the two clouds clashing is not as far from the truth as it might seem.

When we say that it is "raining cats and dogs", we may be unaware that the phrase expresses some strange and ancient ideas about rainfalls in general. "I will rain bread from heaven" was the announcement of the coming of manna in the wilderness. Pliny tells us that it had been known to rain flesh (frogs may have been meant) which the birds eagerly welcomed. Fishes, too, fell;[1] and it rained milk and blood when Acilius and Porcius were consuls; and iron when Crassus was slain by the Parthians, on which occasions the soothsayers very

[1] Samuel Pepys wrote in his diary, May 23, 1661—"At table I had very good discourse with Mr. Ashmole, wherein he did assure me that frogs and many insects do often fall from the sky, ready formed." Showers of fishes and frogs have been known to have been caused by the updraught of a whirlwind; also the appearance of a shower of blood can be due to wind-borne pollen of certain red fungoid organisms.

wisely warned the people to take cover. Rainfalls of wool—also of tiles and bricks—were curious variations of the gifts which the heavens bestowed.

Hail was easier to account for as rain congealed into an ice, which had a solid and permanent counterpart in the rock-crystal found on the tops of mountains. Snow was hail in a softer state; and frost was dew frozen.

Meteorites dropped out of the sun. One fell in Achaia in the daytime.

"The stone is showed at this day as big as a wain load, carrying a burnt and dusty colour. At the same time a comet, or blazing star, also burnt in the night: which, if any man believe was predicted must also confess that this divinity or foretelling of Anaxagoras was more miraculous and wonderful than the thing itself. And then farewell to the knowledge of Nature's works and welcome confusion of all if we should believe that either the Sun were a stone or that a stone were ever in it. But that stones often do fall down no man will make any doubt. In the public place of Exercise in Abydos there is one preserved and held in great reverence. It is but of a mean and small quantity, yet it is the same which Anaxagoras (by report) predicted should fall in the midst of the earth." [142]

Rainbows were not in any way alarming, nor did they predict with certainty either fine or rainy weather. They always occurred opposite the sun in the form of a semicircle and were caused by sunbeams striking on a hollow cloud and being beaten back once more against the sun. In this way the wonderful variety of colours appeared, caused by the mixture of clouds, air and fiery light all mingled together.

Lastly, there were miraculous appearances in the sky, attested by witnesses, which remind us of instances in history when in the stress of battle visions appeared. The Angels of Mons are still within our recollection.

"In the time of the Cimbrian wars we have been told that Armour was heard to rustle and the Trumpet to sound out of Heaven. And this happened very often both before and after those wars. But in the third consulship of Marius the Amerines and Tudertes saw men in arms in the sky rushing and running one against another from the East and West, and those of the West discomfited." [143]

CHAPTER XVIII

Of Places and Peoples

WE have seen Herodotus cited as an authority on astronomy. On that subject he may not have been of great value, but on anthropology and geography he was indispensable. His history, from which Pliny quoted freely, constituted the very foundation of the knowledge accepted by all ancient writers. Next to Homer, whose word on any scientific matter was law, he invested the world with wonder, the freshness of outlook inseparable from hearing from the lips of travellers from overseas experiences that were entirely new. What did it matter if some of these were a little over-stated?

By good fortune we gain a very fair idea of the world, as Pliny imagined it, from a map made by a contemporary, Pomponius Mela. This shows the surface of the earth divided into five zones, of which the central round the Equator was tropical, too hot for human habitation, and those at the opposite extremes too cold. This left the two temperate zones in the middle alone fit for human occupation; one of them being the portion of the earth with which the ancients were acquainted, the other on the opposite side of the globe involving complications about residence in the neighbourhood of the Antipodes which have already been noticed.

Babylon occupies approximately the centre of the habitable globe, with the Mediterranean dividing Africa and Ethiopia from Europe. Britain and the country of the Hyperboreans are to be seen lying well away to the North. In the East is a vast and largely mythical continent divided by a great mountain range (the Himalayas) to the south of which is India, with Scythia and Seres (China) away to the North. The Caspian

cuts into the outline of the world on the North in the same way as the Persian Gulf and the Red Sea cut into the coast-line on the South, the space between being filled by Media, Persia and Parthia. By this arrangement the design gains considerably in balance and symmetry, and presents the idea of the world as a kind of mushroom-shaped island with its roots well bedded in the depths of the surrounding ocean.

Pliny accepts the estimate of Artemidorus as to the length of the surface of the earth from East to West—8778 miles, with a breadth of 5462 miles—measurements of singular precision. The whole area was divided into three parts or continents—Europe, Asia and Africa—and the strange variety of peoples that existed in the world was bewildering. It was a diversity of type, as pictured by the ancients, likely to kindle the imagination and open up an endless field for investigation.

"The power and majesty of Nature in every particular action of hers seems incredible; for to say nothing of the painted peacock's feathers, of the sundry spots of tigers and panthers, of the variable colours and marks of so many creatures besides, let us come to one point only, the variety of man's speech, so many tongues and languages in the world that one stranger to another seems scarcely to be a man at all. Then come to view the variety that appears in our face and visage, although there are not more than ten parts in it; see how among so many thousands you will not find two persons who are not distinct in countenance, a thing that no artist or painter (be he ever so cunning a craftsman) can perform. And yet I must warn the readers of this history of mine that I will not pawn my credit for many things I shall deliver in it, nor bind them to believe all I write regarding strange and foreign nations. I will rather refer them to my authors whom they may believe if they list. Only let them not object too much to follow the Greek writers who from time to time have been most diligent in penning and most curious in searching after antiquities." [144]

I

Pliny in these words very wisely limits his responsibility. He begins his description at the point where the sun sets—at

the Straits of Gades through which the Atlantic Ocean pours into the inland sea. At the narrowest point high mountains formed the barriers of the entrance and were named the Columns, or Pillars, of Hercules (immortalised in the sign of the American dollar—$—representing the two columns bound with a garland). Hercules dug the channel by which the ocean was admitted; and the monkeys on either side of the Straits were regarded by the ancients as the evil spirits responsible for mischief done to ships and mariners.

In Spain, notoriously the most troublesome province of the Roman Empire, we are made acquainted with the tradition that the Iberians, Persians, Phœnicians and Carthaginians at one time spread over the whole of the country, and that the name "Lusitania" was derived either from the Games (*lusus*) of Father Bacchus, or the fury (*lyssa*) of his boisterous attendants. Pan presided over the country and no doubt his patronage was intended to account for the wildness and turbulence of the inhabitants. Spain also, so Strabo tells us, was overrun with rabbits and the pest spread to the neighbouring islands. Ferrets had to be introduced from Africa to keep the numbers down.

After Spain, France. Pliny emphasises the advanced civilisation of Gaul, as in point of culture, wealth and manners more a part than a province of Italy. Italy with justifiable pride is lauded to the skies as the parent of all lands, chosen by the providence of the gods to unite the scattered empires of the earth, to bestow a polish on men's manners, to unite the discordant dialects of the nations and to become a great mother-country. For these destinies she was eminently fitted by Nature. The coast, climate, fertility of the fields, the cool groves and sunny hillsides, luxuriant forests, fruitful vines and olives, flocks, cattle, horses, rivers and springs—all were benefits suited to advance the commerce of the world.

In shape Italy resembled an oak leaf, being much longer than it was broad, and terminating in the form of an Amazonian buckler (rather like a crescent) with two horns at the end. Following the arrangement adopted by the Emperor Augustus, Pliny divides Italy into eleven districts and describes them in

order down the coast line. We discover amongst other facts that the Tiber was more suitable for navigation by rafts than by ships for most of its course, and that "the Campaine" was in Pliny's day a blessed and fruitful country, a vale with hills rising from it, clad with vines that supplied wines famous all over the world. This was the fortunate land where Father Liber and Ceres were said to be ever striving for the mastery. Pliny does not forget to mention the ancient Neapolis, a colony of the Chalcidians—also Herculaneum and Pompeii, so tragically associated with his death. Prominent amongst the islands stood Capreæ on which the castle of Tiberius stood.

An interesting point is the mention of fire-walkers in Italy:

"Not far from Rome, within the territory of the Falisci there are some few families called Hirpix which at their solemn yearly sacrifice, celebrated by them in honour of Apollo on Mount Soracte, walk on a burning pile of wood in great jollity and are never burnt one wit. For this reason it is ordained by an express act of the Senate that they should be privileged and have immunity from warfare and all other Services." [145]

The most famous of the islands of the Mediterranean mentioned by Pliny is Cyprus, to which he says nine kingdoms at one time did homage. As a geological guess he suggests that Cyprus was once a part of Syria and that it became isolated by "the fall and tumbling down of certain hills". Crete and Cyprus may possibly have been "the isles of the nations" frequented by the sons of Japhet; certainly they were steeped in the ancient mythology. Paros was the island of Andromeda; and Cyprus was the island of the fair-haired Aphrodite Anadyomene, the goddess of laughter, who was washed ashore after being brought from the North by Vulcan. When she awoke on the strand, "risen from the foam", she smiled on the islanders so sweetly that ever since they treated her as a goddess and even to-day in spite of ecclesiastical protests speak of her as "St. Aphrodite". This Aphrodite, a picture of whom Apelles painted from the concubine of Alexander the Great, is to be distinguished from the other Aphrodite Malainis, "the dark one".

Pannonia, bounded by the Danube, and Moesia which extended as far as the Euxine recall the most famous of all inland voyages. Conjecture has been rife as to the direction taken by the Argonauts; but it is believed as more rhan likely that they first reached the Black Sea and then either penetrated into Russia by the Dnieper (witness the Greek coins that have been found through Russia as far as the Baltic) or sailed up the Danube as far as was possible and then portaged their ship over the Alps, to take the water again at Nauplia at the head of the Adriatic. This voyage of the Argo could, according to prevailing ideas, only have been possible with the assistance of magic; and Pliny quotes Alexander Cornelius as saying that the ship was built of the tree Eone which was "like the Oak that carries Mistletoe, the timber whereof neither water will putrify nor fire consume, no more than the Mistletoe itself. But so far as ever I could learn, no man knew that tree but himself"—an insinuation which somewhat detracts from the accuracy of the story.

We next arrive at the Peloponnesus, situated between the Ægean and Ionian Seas, in shape like the leaf of the plane tree, from the angular indentations of the coast-line. It appears that attempts were made at different times by Demetrius, Julius Cæsar, Caligula and Nero to cut through the narrow neck connecting the Peloponnesus with the mainland in order to save the larger vessels the perilous voyage round the peninsula. The usual custom was to carry the smaller vessels across on vehicles, but as the attempt to make the canal invariably failed, it was taken as a proof that these interferences with the designs of nature were impious and therefore impracticable.[1]

To the North rise the mountains of Thessaly, thirty-four in number, of which "old Pelion and the skyish head of blue Olympus" are the most prominent. Between Ossa and Olym-

[1] A more successful waterway was the Red Sea canal, begun by Necos, King of Egypt and completed by Darius. Herodotus says that in length it was four days' journey and wide enough to take two trieremes abreast. A hundred and twenty thousand Egyptians lost their lives in making the necessary excavations in the reign of Necos, who stopped the work because of the warning of an oracle that " he was labouring for the barbarian"—an argument that has been used in more polite terms against the Channel Tunnel.

pus lies the valley of Tempe over which Pliny waxes poetical. The green tints, he tells us, are reflected in the waters of the river Peneus as it rolls over its pebbly bed; the banks are covered with tufts of verdant herbage and the melodious warblings of the birds make it a Greek Paradise. With it is associated Delos, so called from its sudden emergence from the ocean, famous for the great temple of Apollo, and reputed to have once been an Island which for long floated on the waves and so escaped destruction by earthquake.

II

Through Macedonia, once mistress of the world, the traveller reaches the Hellespont, across which Xerxes led his army over a bridge of boats. Then on to Scythia,[1] the name given to the outlying regions to the north. One of the Scythian nations had azure-coloured hair (one would rather have expected the eyes to be blue), while amongst the other inhabitants were

> "The Anthropophagi, and men whose heads
> Do grow beneath their shoulders."

"The report that the Scythians feed ordinarily on man's flesh would be thought incredible if we did not consider how in the very middle and heart of the world, even in Sicily, Italy, here hard by, there

[1] It is disappointing that Pliny omits any reference to the Amazons in Scythia. He only mentions them as a type of "warlike women" whom rather unchivalrously the sculptors and image makers delighted to portray as wounded or dying. One would have expected Pliny to follow Herodotus in his historical account of a race whom the Scythians called the "man-slayers". It appears that the Greeks after the battle of the Thermôdon put to sea with their Amazon prisoners; but these rose and massacred the crew to a man. Then they sailed the ship to a part of Scythia, stole all the horses they could lay hands on, and attacked the Scythians. These northerners, discovering from the dead bodies left on the field the sex of their adversaries, craftily adopted the tactics of sending out a company of young men who encamped as close as they could to the enemy. As by degrees communication was opened up by these peaceful measures, the camps joined amicably and later they all agreed to leave the country to find a new home. Thus it came about according to the story that the Sarmatian women, as a historical fact, observed the customs attributed to them of hunting on horseback, fighting in the field and dressing like their husbands. "Their marriage-law", says Herodotus, "lays it down that no girl shall wed till she has killed a man in battle. Sometimes it happens that a woman dies unmarried at an advanced age, having never been able in her whole lifetime to fulfil the condition."

have been such monsters of men, the Cyclopes and Lystrigones. To go no further than the other side of the Alps there have been even of late days those that kill men for sacrifice, and that means little difference from chewing and eating their flesh.

"Near those Scythians that live toward the Arctic pole, and not far from that climate which is under the rising of the North-east wind, about that famous cave or hole out of which that wind is said to issue (which place they call the cloister or key of the earth) dwell the Arimaspians who are known for having one eye only in the midst of their foreheads. They carry on a war about the gold mines with Griffins, a kind of wild beast that flies and fetches gold out of the veins of those mines. These savage beasts strive as eagerly to keep and hold the gold mines as the Arimaspians are to get the gold away from them.

"Above them are other Scythians called Anthropophagi, in a country called Abarimon within a vale of Mount Imaus, savage and wild men, living and conversing usually among the brute beasts; they have their feet growing backward and turned behind the calves of their legs, although they run most swiftly. These men can live in no other climate than their own, which is the reason they cannot be brought to other kings that border upon them, nor could they be brought to Alexander the Great. The former Anthropophagi, or eaters of man's flesh, whom we have placed about the North Pole are accustomed to drink out of the skulls of men's heads and to wear the scalps, hair and all, instead of mandellions (cassocks) or stomachers before their breasts. And in Albania there are a sort of people born with eyes like owls, of which the sight is fiery red: from their childhood they are grey headed and can see better by night than by day." [146]

Further on lay the impenetrable mountainous regions where snow fell perpetually, the flakes drifting like feathers. This was a part of the world condemned by the decree of nature to be immersed in thick darkness, suited for nothing except the generation of cold and to be haunted by the chilling blasts of the northern winds.[1]

[1] In the furthest north beyond Scythia, Herodotus speaks of the country being concealed from sight and made impassable "by reason of the feathers which are shed about abroad abundantly. The earth and air are full of them, and this it is which prevents the eye from obtaining any view of the region."

But behind these mountains and beyond the reach of the blasting winds dwelt a happier race, the Hyperborei, noted for their longevity and complete immunity from sickness and disease, toil and battle. Here it was that the hinges of the world on which the world revolved were placed; here, too, the extreme limit of the revolution of the stars was reached. The people lived in woods and groves. Death only came to them when they were satiated with life. Then they used to leap off a rock into the sea, the happiest way they knew of ending existence. Most of the older authorities were in agreement that it was a place where a day lasted for six months and that it was therefore possible to sow in the morning, reap at midday, and gather the fruits at sunset. The night was spent in caves. One could imagine that these cave-dwellers were the artists who painted the deer and bison on the ceilings of their caves.

Off the Scythian shores lay an immense island called Baltia where the islanders subsisted on birds' eggs and oats. Some of the people had the feet of horses and were called Hippopodes. Others had ears large enough to cover the whole body and so "save their nakedness".

Scandinavia was another island of a magnitude not yet determined, where quantities of amber were washed up by the waves in spring. The German coast had not been fully explored, but it was known that five races—the Vanditi, Teutoni, Cimbri and Chatti—lived in the interior.

Pliny is able to speak from personal observation of a barren land devoid of trees where he witnessed a very early phase of European civilisation. He describes the conditions that prevailed when the earliest villages were built in marshy land by a lake, or river, or by the sea, either from motives of safety or to gain the easiest form of livelihood by fishing. Usually such dwellings stood on stilts in the marshy ground, and rubbish and fish bones would accumulate to form a more solid patch of ground as a kind of platform at the front door. Occasionally they would make an encampment on higher ground where a better look-out could be kept and existence would be less drastic.

"In the North (he says) I myself have seen the people called Canchi (the lowlanders of Zeeland) where there is no show or report of any tree. For a mighty great compass their country lies so much under the Ocean and so subject to the tide, that twice a day and night by turns the sea overflows a mighty deal of ground when it is flood and leaves all dry again at the ebb and return of the water, insomuch that a man can hardly tell what to make of the outward face of the earth in those parts, so doubtful is it between sea and land. The poor silly people who inhabit those parts either keep together on such high hills as Nature has provided here and there in the plain, or else raise mounts with their own labour and handiwork above the height of the Sea. On these they set their cabins and cottages. Dwelling thus as they do, they seem (when it is high water and all the plain overspread with the sea round about) as if they were in little barks floating in the midst of the sea. Again at low water when the sea is gone you would take them for such as had suffered shipwreck, having their vessels cast away and left lying amid the sands: for you will see the poor wretches fishing about their cottages and following after the fishes as they go away with the water. They have not a four-footed beast among them, neither do they enjoy any benefit of milk as their neighbour nations do. Nay, they are destitute of all means to chase wild beasts and hunt for venison, inasmuch as there is neither tree nor bush to give them harbour. Seaweeds or Reek, rushes and reeds growing upon the washes and meers serve them to twist for cords to make their fishing nets with. These poor fools and silly creatures gather a slimy kind of fat mud (peat) which they dry against the wind rather than the Sun; and with that earth, for want of other fuel, they make fire and seethe their meat (such as it is) and heat the inward parts of their body, ready to be stark and stiff against the chilling North wind. They have no other drink but rain water which they save in certain ditches after a shower and those they dig at the very entry of their cottages. And yet see: this people (wretched and miserable as they are) if they were subdued at this day by the people of Rome they would exclaim against being reduced to slavery! True it is that Fortune spares many men, to let them still live in pain and misery."[1]

[147]

[1] Herodotus also gives a life-like description of certain lake-dwellers around Macedonia. "Their manner of living is the following. Platforms supported on tall piles stand in the middle of the lake, which are approached from the land by a single narrow bridge. Each man has his own hut wherein he dwells, upon one of the plat-

The German forest presented a lively contrast to the treeless districts by the sea. The great expanse of oaks had in some places become so entangled and the roots so bound together that, where the sea was able to undermine them, great pieces broke away and became floating islands, with the mighty branches playing the part of rigging. From what Pliny says these obstructions could be as dangerous as icebergs are to-day in mid-Atlantic.

"Many a time such Oaks have frightened our fleets and armadas at sea; especially in the night season when the waves have driven them, as if of purpose, directly against their prows standing at anchor: insomuch as the sailors and passengers within, having no other means to escape them, were put to their shifts and forced to range a naval battle in order, and all against trees as their enemies!"[1]

Further inland the great Hercynian forests were believed to have been untouched since the creation of the world. So thick was the growth in many places that the bare roots had risen upwards and taken with them the earth; or where they had not raised the earth they formed great archways through which a whole troop or squadron of horsemen could ride in battle order. Pliny is evidently speaking here of his experiences in the German campaigns.

Next in order is the great island of Britannia, formerly called Albion from the whiteness of her cliffs. Barely thirty years had elapsed at the time Pliny wrote since any extensive knowledge had been gained by the successes of the Roman arms; and the Caledonian forest had not as yet been penetrated. We are told that Agrippa estimated its length at 800 miles, and its breadth at 300; not a bad guess. Hibernia he thought to be

forms, and each also has a trap-door giving access to the lake beneath; and their wont is to tie their baby children by the foot with a string, to save them from rolling into the water. They feed their horses and their other beasts upon fish, which abound in the lake to such a degree that a man has only to open his trap-door and to let down a basket by a rope into the water, and then to wait a very short time, when he draws it up quite full of them. The fish are of two kinds, which they call the paprax and the tilon."

[1] A modern parallel are the floating islands to be met with in the neighbourhood of the Philippine Islands after heavy rains when pieces of land frequently become detached and are seen floating away with their trees and undergrowth in the normal manner, until they break up and gradually dissolve in the ocean.

about the same in breadth and 200 miles shorter. The Orcades, or Orkney Islands, were forty in number, the Hebrides thirty, and there were others called the Electrides, because they produced *electrum*, or amber. Ultima Thule was the most remote land of all; and opinions have differed whether Iceland, the Ferroe group, or the Shetland Islands were indicated. At one day's sail from Thule was the frozen ocean which some called the Cronian Sea.[1]

III

Ex Africa semper aliquid novi is a well-known classical tag from Pliny. One of these novelties found in Africa were black gods and somehow they found their way into Greece, for Pansanias says he came across a black Demeter. It was a continent of fairy tales and incredible wonders. A Roman colony at Lixos was said to be near the palace of Antæus, who fought with Hercules. Close by were the Gardens of the Hesperides, protected by an arm of the sea on the one side and a dragon on the other. Of the grove that bore the golden fruit nothing was left, Pliny remarks, except a few wild olive trees, and he wisely reserved his judgment as to the historical accuracy of the whole story.

Near by was situated the city of Sala, on a river bordering the desert, a region infested by troops of elephants and leading straight towards Mount Atlas, the most mysterious neighbourhood that even Africa could boast of. This mountain, which Hercules once bore on his shoulders, raised its head to the heavens from the midst of the sands. It was rugged and craggy on the side facing the ocean; on the side facing the interior it was shaded by dense groves of trees and refreshed by flowing

[1] It is interesting to compare with this account the discoveries of Pytheas, a famous Greek navigator of the fourth century B.C. and a contemporary of Aristotle. What he said appeared so fantastic to Polybius and Strabo that they would not credit his statements. Yet he undoubtedly reached Thule, six days' sail from Britain which he knew sufficiently well to be able to describe St. Michael's Mount and the tin mines of Cornwall. He also sailed into the Baltic and was aware that in the extreme north the nights were sometimes only two hours long—an astonishing adventure.

streams. During the daytime all was silent with the dreadful silence which reigns in the desert. At night the hillside gleamed with innumerable fires, as the Satyr crew danced and gambolled to the clash of drums and cymbals.

The only way of crossing the desert—nothing except sand and serpents—was to be guided by the stars. At last forest land is reached filled with wild beasts and elephants and tribes which built houses with blocks of salt quarried like stone out of the mountains. Sometimes springs were to be met with which remained at a boiling heat from noon to midnight and then froze until the sun rose in the heavens on the following day.[1]

The Nile was taken as the dividing line between Africa and Asia. Its source was believed to be a lake in Mauretania where crocodiles abounded (Lake Tana in the highlands of Abyssinia seems clearly indicated). Then it travelled for an immense distance through burning sands, sometimes burying itself out of sight. Soon again it gave birth to dense forests of trees as it passed through the middle of Ethiopia.[2] When it reached the last Cataract it rushed with an uproarious noise between the rocks lying in its way. Afterwards it became more subdued and, wearied at last by the distance it had travelled, quietly discharged itself into the Egyptian sea. During certain seasons of the year its volume increased and then the inundations greatly promoted the fertility of the earth. Many theories were advanced for these periodic floodings. Strabo put forward the true reason that the heavy rains in a distant part of Ethiopia during the summer months swelled the volume of the river.[3]

[1] Herodotus speaks of the spring called "the Fountain of the Sun" near Thebes in Egypt. The water was lukewarm at dawn, became quite cold at noon when the people watered their gardens, towards midnight it boiled furiously and then gradually cooled again.

[2] The Ethiopians had the reputation of being the tallest and handsomest men in the whole world; Isaiah specially refers to them as "men of stature".

[3] The Nile was the world's great mystery river: no wonder that the Egyptians worshipped it. Seneca was deeply interested in the problem and believed that the key to the mystery lay in the existence of underground rivers and a hidden sea. On what other supposition, he asked, could one account for rivers coming to the surface unless the source of the moisture was shut up in the earth? The Tigris, for instance, disappeared to the depths of the earth and appeared again: the Alphaeus actually

Witchcraft was prevalent, as it is now—

"Isogonus and Nymphodorus both avouch that there are certain houses and families of sorcerers in Africa, who by their blessings and good words instant bewitch; so much so that sheep die, trees wither and infants pine and winder away. Isogonus adds that such-like people live among the Triballians and Illyrians who with their very eyesight can witch, yea, and kill those whom they look wistly upon for any long time, especially if they are angered and their eyes betray their anger; and grown men are more subject to this danger than children under fourteen years of age. This also is noticeable in them that in either eye they have two sights or apples. Philarchus tells us that in Pontus the whole race of the Thibians, and many others besides, have the same quality and can do the same. They are known, he says, by these marks; in one of their eyes they have a double pupil, in the other the print or resemblance of a horse. He also says of these men that they will never sink or drown in the water, even though they are charged with weighty and heavy apparel. And Cicero, a Roman writer here among us, testifies that generally all women who have such double apples in their eyes have a venomous sight and do hurt therewith.

"In the deserts of Africa you will often meet with fairies appearing in the shape of men and women, but they soon vanish away like fantastical illusions. See how Nature is disposed to devise full wittily in this and such-like pastimes to play with mankind, not only to make herself merry but to set us a wondering at such strange

sank in Achaia and crossed under the sea and poured forth its waters again in Sicily. And was it not known that the Nile burst forth from the ground when the inundations took place in the summer, when the stream was not swollen, as might be expected, from the rain from above?

Here is what Seneca says: "I have myself heard from their own lips the story told by the two non-commissioned officers sent to investigate the sources of the Nile by our good Emperor Nero. The King of Ethiopia had supplied them with assistance and furnished letters of introduction to the neighbouring kings, which enabled them to penetrate into the heart of Africa and accomplish a long journey. 'We came' (I give their own words) 'to huge marshes, the limits of which even the natives did not know, and no one else could hope to know; so completely was the river entangled with vegetable growth [the "sudd"]. The waters were impassable by foot and even by boat, since the muddy overgrown marsh would bear only a small boat containing one person. There (my informants went on) we with our eyes saw two rocks from which an immense quantity of water issued." This evidence was conclusive to the mind of Seneca who therefore rejected the theory of Anaxagoras that the rise of the Nile was owing to the melting of the snows on the uplands of Ethiopia, in favour of a belief in a great underground lake, or series of lakes, from which periodically the water collected there belched forth with extreme violence.

miracles. And I assure you, she plays her part daily and hourly in such a manner that to recount every one of her sports by themselves no one is able with all his wit and memory. Let it suffice therefore that we have set down these prodigious and strange works of hers, shown in whole nations to testify and declare her power." [148]

Ethiopia was the mysterious land away to the south always at war with Egypt—the Abyssinia which Milton faithfully described as:

> "True Paradise, under the Ethiop Line
> By Nilus head, enclos'd with shining Rock
> A whole day's journey high."

In one of its cities a golden cat was worshipped[1]—a discovery made by the Roman expeditions sent to these parts by Augustus and Nero to find the source of the Nile. Stories were brought back of a strange island of parrots; and of another island on which the city of Meroe stood amidst forest land teeming with rhinoceros and elephant. Still another mystery island, named Tadu, was ruled by a succession of queens, and Ethiopia had forty-five kings in all, presumably to accommodate the many varying types of inhabitants. The reason for this remarkable divergence of type was assumed to be the prevalent heat which was an active agent in producing extremely dissimilar forms and shapes in bodies. There was one race, for instance, without noses, the whole face presenting a plane surface; another without upper lips; others without tongues; others without nostrils. It is probable that the Africans distorted their features in those days, as savage tribes do now. Evidently the Roman explorers attributed the disfigurement to natural rather than fashionable causes. Pygmies,[2]

[1] The esteem in which cats and dogs were held in Egypt is shown by Herodotus to have been so great that if a cat died in a house, the inmates shaved their eyebrows as a sign of mourning; if it was a dog they shaved the head and whole of the body.

[2] The pygmies were mentioned by Homer and also by Herodotus who gives an account of an expedition into the interior of Africa. After crossing the desert the travellers came to a part where there were trees and while the young men of the party were gathering fruit "there came upon them some dwarfish men, under the middle height, who seized them and carried them off. They were led across extensive marshes, and finally came to a town, where all the men were of the height of their conductors, and black complexioned." It appears that they were well enough treated.

too, were found; also black men who stained themselves red,[1] and others who lived on nothing but elephant's flesh. One tribe had a dog for a king, and the rulers divined from its movements what were his commands. Some peoples, too, had the heads of dogs, and certain other peculiarities which suggest very strongly that confusion may have arisen between human beings and the larger apes.

The deserts and "vasty wilds" of Arabia[2] were frequented by wandering tribes, some of them named from the tents of goats' hair which they pitched where they pleased. The Nomads lived mostly on milk and the flesh of wild beasts, varied by an intoxicating liquor extracted from the palm tree. These Arabs wore the mitra, an early form of turban, and allowed their hair to grow uncut, although they shaved the beard, leaving the growth on the upper lip. They were accounted the richest nation in the world, because, so it was said, they drew wealth from the Roman and Parthian empires and purchased nothing in return—an early instance of an exporting country refusing to accept imports.

The chief association in Pliny's mind with Arabia was an unhappy one, because of the enormous quantity of incense and sweet-smelling gums exported from that country for use at funerals, whereas the gods in respect of the amount of incense burnt in their honour were shabbily treated. To make up for this defect it was a land from which the pearls came, beloved of the Roman women, and that helped to justify the title, usually assigned to Arabia, of "Happy".

"It is an unworthy country for that surname that would seem to be bestowed by the gods above, whereas there is greater cause to thank the infernal spirits beneath. For what has made Arabia blessed, rich and happy except the superfluous expense that men

[1] The Libyans, so Herodotus says, besmeared their bodies with red paint.

[2] Herodotus tells the story of the first "pipe-line" constructed across the Arabian desert: "The Arabian king, they say, made a pipe of the skins of oxen and other beasts, reaching from the River Corys all the way to the desert and so brought the water to certain cisterns which he had had dug in the desert to receive it. It is a twelve days' journey from the river to this desert tract. And the water, they say, was brought through three different pipes to three separate places."

take in funerals, employing in burning the bodies of the dead those sweet odours which they knew were due to the gods? Those who are well acquainted with the world affirm that Saba does not produce as much Incense in one whole year as the Emperor Nero spent in one day when he burnt the corpse of his wife, Poppœa. Cast then how many funerals every year were made throughout the world! What heaps of odours have been bestowed in the honour of dead bodies, while we offer it to the gods by crumbs and grains only! And yet when men made supplication to them with the oblation of a little cake made of salt and meal and no more, they were no less propitious and merciful; nay, they were more gracious and favourable a great deal, as may appear by histories. But it is the sea of Arabia that has an even greater right to be called 'Happy', for it enriches more than the land, by reason of the orient pearls that it yields and sends to us. And surely our pleasures, our delights and our women together are so costly that not a year goes over our heads but that in pearls, perfumes and silks India, the Seres (China) and that demi-island (peninsula) of Arabia stand us in at least a hundred millions of Sesterces. But of all this mass of Spice and Odours, how much (I pray you) comes to the service of the celestial gods in comparison of that which is burnt at funerals to the spirits infernal?" [149]

Arabia and Syria lead to Judæa. Jordan is spoken of as a delightful stream winding towards Asphaltites, a lake of a gloomy and unpropitious nature which produced nothing but bitumen. The bodies of animals refused to sink in its waters; even bulls and camels were seen to float. A reference occurs to the Essenes, a people living apart from the world, without womenkind or money, and with only the palm trees for their companions. Their numbers were constantly recruited from strangers wearied with the trials and miseries of life; so that profiting by the misfortunes of others this community of outcasts continued to exist for ages.

IV

Of India a fairly reliable knowledge was gained from the conquests of Alexander the Great. It was conjectured that it was

possible to sail down the entire length of the Indian coast in forty days and nights. Eight nations inhabited the country; and the entire population amounted to a third of the whole earth. The rivers attracted the chief attention. Alexander took over five months to reach the mouth of the Indus, while the Ganges is described as flowing in a wild torrent until it reaches the plains where it quiets down and becomes immensely broad.

The chief note of this vast country is the profusion of riches and the wealth of its natural resources. One king alone had 60,000 foot soldiers, 1000 horse and 700 elephants magnificently caparisoned and always ready for battle. Many different castes existed—for tilling the ground, for military duties, mercantile pursuits, affairs of State and religion. The country was of great fertility, abounding in marvellous fruits, trees of the rarest excellence,[1] wild beasts and birds in endless variety. Gold and huge pearls were hoarded by the ruling classes. Coral reefs grew like trees at the bottom of the deep green water, and branches of this coral "foliage" were frequently broken off by the rudders of the ships. Tiger and elephant hunting represented the great national sport. Turtles supplied not only food but, from all accounts, lodging as well, since whole families were sometimes accommodated under one shell.

In the descriptions of strange and miraculous peoples it is not easy to know to which part of the globe they belong, whether to India or Ethiopia. Geographical accuracy has to be sacrificed. But here is an account that applies fairly generally to the Far East:

"There are to be seen many men there more than five cubits tall. They are never known to spit, they are not troubled with pains in the head, toothache or grief of the eyes; and they seldom or never complain of any trouble in other parts of the body, so hardy are they and of so strong a constitution through the moderate heat of the Sun. Besides this, among the Indians are certain Philosophers

[1] In "India" there were trees growing wild which produced a wool, according to Herodotus, exceeding in beauty and goodness that of sheep. (*Baumwolle* is the German name for cotton.)

whom they call Gymnosophists, who from Sun rising to the setting thereof are able to endure looking full against the Sun all the day long, without winking or once moving their eyes; and from morning to night can abide to stand sometimes on one leg and sometimes on the other in the sand, scalding hot as it is.

"In many other hills of that country there is a kind of men with heads like dogs, clad all over with the skins of wild beasts who in lieu of speech bark. They are all armed with sharp and trenchant nails and they live upon the prey which they get by chasing wild beasts, and fowling. Ctesias writes that they number over 120,000. He also says that in a certain country of India the women bear only once in their life and their infants wax grey (with white hair) as soon as they are born into the world: likewise a people named Monoscelli that have only one leg apiece, but are most nimble and hop wondrous swiftly. These men are also called Sciopodes because in the hottest season of the summer they lie on their back and defend themselves with their feet against the Sun's heat. Again, Westward beyond these, there are some without heads on their necks who carry eyes in their shoulders. Among the Western mountains of India the Satyrs dwell, creatures most swift in footmanship, some times running on all fours, at other times upon two feet like men, but so light-footed that unless they are very old or sick they cannot be taken.

"In the utmost marches of India, Eastward, about the head of the River Ganges, there is a nation called the Astomes because they have no mouths; they are hairy all over the body, but are clothed with the soft cotton and down that comes from the leaves of trees. They live only on air and the smelling of sweet odours which they draw in at their nostrils. They take no meat nor drink, only pleasant savours from sundry roots, flowers and wild fruits growing in the woods; and these they carry about with them when they take a far journey because they would not miss their smelling. And yet if the scent is in any way strong and stinking, they are soon overcome and die.[1]

"Higher in the country, even in the edge and skirts of the mountains, the Pygmies are reported to live. They are called so because they are but a cubit or three shaftments (or spans) high, that is to say,

[1] The story is repeated by Mandeville in connection with a race of dwarfs "of good colour and fair shape" in the isle of Pytan. "These men live by the smell of wild apples. And when they go any far way, they bear the apples with them; for if they had lost the savour of the apples they should die anon."

three times nine inches. The climate in which they dwell is very wholesome, the air healthy and always like the temperature of the Spring, because the mountains are on the North side of them and ward off all cold blasts. These pretty people Homer has said are much troubled and annoyed by cranes. They say that in the Spring time they all set out in battle array, mounted on the backs of rams and goats, armed with bows and arrows; and so down to the seaside they march, where they make foul work among the eggs and young cranelings newly hatched, which they destroy without pity. Thus for three months their expedition continues and then they make an end of their valiant service.

"If they continue any longer, they are never able to withstand the new flights of this fowl, now grown to some strength and bigness. Their houses and cottages are made of clay or mud, feathers and egg shells, although Aristotle writes that these Pygmies live in hollow caves and holes underground.

"In the parts of India where there are no shadows to be seen the men are five cubits of stature and two hand breadths over and they live 130 years and never age for all that, but dies as if they were in their middle and settled age. Ctesias says there is a race of Indians called Pandore inhabiting certain valleys who live two hundred years. In their youthful time the hair of their head is white, but as they grow in age it waxes black. Contrariwise there are near neighbours who do not exceed forty years and their women bear only once in their lifetime. This is vouched for by Agatharcides who affirms that all their feeding is on locusts and that they are very swift on foot." [150]

Next to the marvels of India comes Babylon, the capital of the nations of Chaldæa, which for long enjoyed the greatest celebrity of all the cities throughout the world.[1] The circuit of its walls was sixty miles. The Euphrates flowed through the city between quays of marvellous construction; its water was pumped to water the gardens planted on the roofs of the palaces and probably also on the huge artificial mounds where the great religious ceremonies were performed. Similar hang-

[1] A curious custom of the Babylonians, according to Herodotus, was for the men to carry walking-sticks, carved at the top with an apple, a rose, a lily, an eagle or something similar, for they never used a walking-stick without some ornament or other.

ing gardens "made in the air" are also recorded in the city of Thebes in Egypt, a city built so hollow that the Egyptian kings were able to lead their armies under the houses. Babylon after a while was eclipsed by Seleucia, a city founded by Nicator ninety miles distant. Seleucia's population was estimated at 600,000 and the outline of its walls resembled an eagle with expanded wings. In its turn Seleucia was deserted for Ctesiphon, founded by the Parthians. Why these vast cities were so quickly supplanted and robbed of their glory is not explained. Pestilence may have been a chief contributing cause and the sunbaked bricks used in building would fall to pieces in course of time and leave little trace.

V

Finally we reach the remote and indistinct portions of the map where fictions so easily displaced facts. Just as the Nile separated Asia from Africa, so Europe and Asia were divided by many straits and narrow passages. One of these was the Hellespont, only 875 paces in width, a space across which oxen could swim; hence the name Bospori. So near, in fact, was the opposite shore that the singing of birds and barking of dogs on the one side could be heard on the other. A more formidable passage lay further on over the chain of mountains where the Gates of the Caucasus were barred with beams shod with iron, while a dank fetid stream flowed in the abyss below. Here was Cumania, a fortress erected to keep back the savage tribes beyond. At this point we see the habitable world severed, as it were, into two parts by the partition guarded by the two gates. On the further side we have hints of Thibet and China. The Seres, or Chinese, were famous for a special quality of cloth or tissue of silk. An ingenious theory has connected the Golden Fleece with a mass of silk in its original golden state; but the story of the sacrifice of the Golden Ram whose priceless coat was hung up in the Grove of Ares and guarded by a sleepless dragon is more consonant with Greek mythology. The Seres are described as a people inoffensive

in manners and shunning intercourse with the rest of mankind although not unwilling to trade with well-intentioned strangers.

On the western side of the world the Fortunate Islands in the Atlantic Ocean are reached. They included Ombrios, which had a lake among the mountains and trees resembling the giant fennel. A second island was called Junonia and contained nothing except a small temple of stone. Another island, infested by multitudes of giant lizards, was called Capraria. Nivaria, crowned with perpetual snow, points definitely to Teneriffe; and Canaria, called by that name because of the numbers of large dogs (not birds) living there, must certainly be the Canary Islands. The vegetation was prolific—fruit of every kind, the date palm and pine nuts, splendid birds, honey in the woods, papyrus in the rivers and the fish called Silurus. The great drawback to these otherwise delightful islands was the number of putrifying bodies of monsters thrown up by the sea and amongst them from all accounts many varieties of that problem of the ages, the sea serpent.

What evidence is there that the ancients sailed round Africa? It would seem that Pliny takes it for granted, on the authority of Herodotus, that the southern voyage was made and hints also at a northern passage:

"On the other side of Gades, a great part of the South or Meridian gulf (round about Mauritania), is at this day sailed. The greater part of it, as of the East also, the victories of great Alexander viewed and compassed on every side, even as far as the Arabian gulf. When Caius Cæsar, the son of Augustus, warred in those parts, the marks and tokens of shipwrecked ships were, by report, still seen remaining there. Hanno likewise, in the time that Carthage flourished, sailed round about from Gades to the utmost bounds and lands-end of Arabia and set down that navigation and voyage of his in writing. Yes, and Caelius Antipater reports that he saw the man who had sailed out of Spain into Ethiopia for traffic of merchandise; and report was made, touching the compassing about of the North that certain Indians who sailed out of India for traffic as merchants were driven by tempest and cast upon Germany. Thus the seas flowing on every side about this globe of the earth, divided and cut into parcels, bereave us of a part of the world, so that neither from thence

hither nor from hence thither is there a thoroughfare and passage. The contemplation of this, serving to discover and open the vanity of men, seems to require a challenge of me that I should project to the view of the eye how great all this is, whatsoever it be, and wherein there is nothing which can satisfy and content the appetite of every man." [151]

Dr. T. R. Glover, in *The Ancient World*, in referring to the reports made to Herodotus that the voyage round Africa, starting from Egypt, took three years, says that Herodotus himself did not believe the story on the ground "that at certain stages they had the sun to the north of them; but the modern sees in a moment that it must have been, if they really went round the Cape of Good Hope, and from Herodotus' comment concludes that this story about the sun was not likely to be invented".[1]

So the voyage in all probability actually took place, a voyage as surprising and romantic as that of the Argonauts.

[1] The passage referred to from Herodotus tells us how a number of ships, manned by Phœnicians, were despatched with orders to make for the Pillars of Hercules and return to Egypt through them. "The Phœnicians took their departure from Egypt by way of the Erythian Sea, and so sailed into the southern ocean. When autumn came, they went ashore, wherever they might happen to be, and having sown a tract of land with corn, waited until the grain was fit to cut. Having reaped it, they again set sail; and thus it came to pass that two whole years went by, and it was not until the third year that they doubled the Pillars of Hercules, and made good their voyage home. On their return, they declared—I for my part do not believe them, but perhaps others may—that in sailing round Libya they had the sun on their right hand."

APPENDIX I

Mediaeval Natural History

MOST, if not all, of the natural history of the Middle Ages is to be found in the Bestiaries, the illuminated picture-books containing all manner of odd creatures with curious stories and allegories in the text. Their aim was one of serious instruction and owed their appearance mainly to a mysterious writer of the fourth century, Physiologus—a pseudonym signifying "Naturalist".

Conjecture claims Physiologus to have been a Greek monk of Alexandria and, as might be expected from this centre of culture, he marks in no uncertain manner the association of religion and erudition which characterised the Alexandrian school.

Æsop's Fables,[1] written in the sixth century B.C., may have suggested many adaptations suitable for the teaching of Christian ideas; but however varied may have been the inspirations of Physiologus the fact remains that there was built up in course of time a singularly unnatural natural history. Animals,

[1] Nor must the influence of Seneca on future mediæval scientific works be overlooked as may be seen from the following exordium in his *Quæstiones Naturales* in which the moral outlook is stressed and the benefits derived from the contemplation of nature fully emphasised. "It will be profitable for me", he said, "to examine the nature of the universe. In the first place we shall rise above what is base; in the second, we shall set the spirit free from the body, imparting to it that courage and elevation of which it stands in need. Besides, subtlety of thought practised on the hidden mysteries of nature will prove no less efficacious in problems that lie more on the surface. And nothing is more on the surface than these salutary lessons which act as safeguards against the prevailing vice and madness—faults we all condemn, but do not abandon. Let us enter then on an investigation of forms of water. . . ." This is the kind of introduction that was adopted almost as a matter of course in the Middle Ages, when God and His angels habitually heralded the discussion of the various processes of nature.

birds, reptiles, plants, trees and stones were made not only to adorn a tale but to point a moral; and the adorning knew few limits.

A symbolism derived from these natural sources was, after all, no new thing. The Bible was full of allegory of the kind. Therefore it was not altogether surprising that allusions to the characters and idiosyncrasies of lions, ants, serpents, horses, dragons and whales figured prominently in the works of such writers as Isidore of Seville, St. Ambrose and Julius Solinus. In 495, Pope Gelasius tried to stem the unruly tide and went so far as to decree that the bestiaries were heretical; but with no effect. They attained so edifying a reputation that so far from being regarded as heretical they were often bound up with that great book of devotion, the Psalter.

In its developed state the bestiary showed that original research had died out and that no attempt had been made to advance upon previous observations of nature. The scribe at his desk and the monk in his cell deliberately invented, with the assistance of ancient documents, the new types of birds, beasts and reptiles which ought to have been, even if they were not, included in the scheme of creation.

These efforts of the imagination attracted, and at the same time were encouraged by, the eagerness with which a number of eccentric facts, other than those derived from the simple-minded ancients, were accepted. One familiar instance of such improvisation is the story, believed to have emanated from France, that the crocodile was accustomed to shed tears of remorse and pity at having to devour a human victim. It was by such examples of ingenuity that the ways of Providence were made to apply to the world in general. Nature was accepted as the great teacher, although in the eagerness to point the appropriate moral unpardonable liberties were taken in her name.

Exaggeration was piled on exaggeration until the natural history built up by Pliny on his study of Aristotle and other writers was turned in too many instances into mere travesties of the truth.

To take a few examples, Pliny had much to say that was both novel and entertaining about elephants; but he never advanced the statement that the largest of all living animals subsisted entirely on air. Yet this idea was widely circulated, and no doubt many edifying lessons were extracted from this crude improbability. Nor did the statement that perfumes refreshed the dove but killed the beetle originate with any of the classical writers who, as practical men, would more likely have advocated some drastic and repellent insecticides. There was, too, a notable difference of opinion about the habits of the salamander, which is well known to be a creature harmless to mankind and the frequenter of damp places. Pliny said that it was of so cold a complexion that if it only touched the fire it put it out, as if it were a block of ice. The mediævalist without any private research into the matter advanced the proposition that the further the salamander was away from the fire, the warmer he became—a difficult creature to leave out in the cold. The hare, too, was said to be able to run faster up hill than down, although Pliny was content to say that it was the hairiest of all animals, and that it slept with its eyes open and grew two livers in Propontis, but only one elsewhere.

Some of the allegories, however, had definite charm and distinction. The Eagle, the king of birds, according to the ancients, had been accustomed to teach its young ones to gaze fixedly at the sun without blinking. The mediæval allegory taught from this incident the lesson of looking towards God: "Whoever is unwilling to fix his gaze on the Sun and loves the darkness of the world, he is despised of God as the young eagle." As a warning the picture illustrating the lesson shows an unworthy eaglet being ignominiously ejected from the nest. A fuller allegory concerned with the eagle showed how its youth could be "renewed", in the familiar words of the Psalmist. When its wings became heavy and its eyes dim, the old eagle would choose a place with a fountain, and then fly into the rays of the sun so that its wings were scorched and the blindness burnt out of its eyes. Finally it plunged three times

into the fountain and, behold, it was born again and its youth renewed.[1]

The Lion as the noblest among the beasts symbolised Christ. In the bestiary he is to be seen seated among ivy leaves, obliterating his tracks with his tail. This was a symbol of the Incarnation, the hiding of the divine nature when Our Lord came amongst men. The Resurrection again is illustrated by a lioness guarding her cubs, which, according to tradition, were always born dead. Then on the third day the lion appears, breathes on them and brings them to life.

The Tiger as a contrast was the embodiment of evil. He typified the hypocrite spotted with numerous vices. Here again a new version of the Pliny story is given. It will be remembered that the tigress pursued the hunters who were carrying away her cubs, and persisted until one by one the hunters released her young ones. The allegory is made to convey the moral by means of an exceedingly subtle variation of this story that a man should entirely commit himself to God. The forest is the world with its dangers and temptations; the hunters represent the devil; and the stolen cub is the Soul. The deceitful hunters throw down to the pursuing tigress, not the cub, but a mirror or glass ball. The tigress seeing her own image reflected in a smaller size mistakes the shadow for the substance and delays her pursuit. The image in the mirror stands for the deceitfulnesses and vanities of the world which exert a contrary power from good and cause a forgetfulness of the individual soul. The Tiger and Mirror appeared as figures in heraldry; as also the Elephant and Castle, the Castle being the tower on the elephant's back filled with fighting men. Many quaint allegories centred round elephants, animals noted for their intelligence and docility. Perhaps the most original of these represented the male and female elephants in the characters of Adam and Eve. The mandrake which the female eats is the Tree of Knowledge, and she passes it to the male, after

[1] In *King Henry IV* the soldiers in their uniforms are said to be

"All plumed like estridges that wing the wind,
Baited like eagles having lately bath'd."

which she conceives and brings forth a calf. The Dragon, the traditional enemy of the elephant, naturally stands for the serpent which caused all the trouble.

Other ingenious allegories included the Antelope with his two horns (the two Testaments) with which he cuts down trees (destroys all vices). In a careless hour, however, he becomes entangled in a bush of heather (drunkenness and viciousness) and is thus caught and killed by a hunter. The Antelope in Collar and Chains also figures in heraldry as a reminiscence of the story.

A secondary grade of creatures included ants, hedgehogs, mice (typifying gluttony and thieving), foxes lying cunningly on their backs feigning death in order to catch birds, crocodiles with two legs, hairy and horned, caught in the act of eating a man, dogs (a Dalmatian is clearly discernible in the pack), a wolf biting its paw out of annoyance, hyenas preying on corpses, dromedaries, cranes guarded by a sentinel holding a pebble in its claw which would naturally drop if he fell asleep and so wake the offender; deer drawing snakes out of the ground and eating them (a reference, possibly, to the story of their horns); a Phœnix resting on a ball of spices, looking at the sun which will presently consume it; a nightingale sitting and singing on a pyramid of eggs; a salamander in a fruit tree licking and poisoning the fruit; Sirens and Griffins tearing men to pieces. Then there were the fabulous animals of Pliny, some of them much improved upon, such as The Mantichora with three rows of teeth, blue eyes, lion's body and tail pointed with a sting at the end, features indicating an insatiable appetite for human flesh. The service of these monsters was to supplement the terrors of the Doom Windows in driving home to Christian worshippers the undesirable prospect of entering the precincts of hell. Such horrors, always fascinating to a popular audience, were considered the means most ready to hand to instruct, or frighten, the masses. For these purposes the bestiaries were evidently not to be despised. The churches were full of similar allusions in decorative carvings on capitals, misericords and "poppy-heads".

A reaction was bound to take place as soon as intellectualism and sounder scholarship marked the period of the Renaissance. The wiser people grew tired of the prevailing absurdities and fictions and aimed at gaining a surer hold on scientific truth. But it could be exceedingly dangerous to speak too openly on matters that had received the approval of the Church, as many indeed found to their cost. Rabelais, for one, had good reason to hide any serious intention he might have behind a mask of jest and ridicule.

With his inexhaustible sense of humour Rabelais found in the works of the ancients, and particularly in Pliny, a refreshing source of allusion, frequently of a ribald character, with which to embroider his somewhat mystifying philosophy. The *Heroic Deeds of Gargantua and Pantagruel* were enlivened by incidents which were, in effect, parodies and can scarcely be understood without a fairly close acquaintance with Pliny's text. Rabelais, much as he loved classical literature, did not hesitate to make uproarious fun of it. He could conjure up a truly exotic menagerie. His philosopher, for instance, at his studies is driven distracted by the noises around him—by the prating of parrots, yelping of foxes, cheeping of mice, chanting of swans, grumbling of cushet-doves, muzzing of camels, buzzing of dromedaries, clamouring of cormorants, sighing of locusts, and a number of other varieties of clamour which it is unnecessary to recapitulate.

Nor did Rabelais omit to parody the plant lore of the ancients. The herb Pantagruelion was a parody on Pliny's description of Flax and its many uses. This marvellous herb in Rabelais' imagination grew to the dimensions of the Giant Beanstalk, and was used for medical and a large number of other purposes. The hangman employed it in the form of cordage as one form of usefulness; and the subject of ropes and rigging leads to imaginary voyages in the air eclipsing the wildest dreams of Jules Verne. Aeronauts could alight whenever the fancy took them at the many "glistening hostelries of the whole twinkling welkin"—at the Bull, the Twins, the Golden Eagle, the Dolphin, the Harp and Flying Horse, the

Ship, the Great and Little Bear and other signs familiar to the traveller, which no less a person than Mr. Weller recognised as a "collection o' fabulous animals". Thus the public house shows a noteworthy link with the undying past.

One of the most effective uses of allegory ever made was in the famous passage on Freedom in the *Areopagitica*:

"Methinks I see in my mind a noble and puissant nation rousing herself like a strong man after sleep, and shaking her invincible locks. Methinks I see her as an eagle mewing her mighty youth, and kindling her undazzled eyes at the full midday beam; purging and unscaling her long-abused sight at the fountain itself of heavenly radiance; while the whole noise of timorous and flocking birds, with those also that love the twilight, flutter about, amazed at what she means, and in their envious gabble would prognosticate a year of sects and schisms."

The full force of the references to the eagle might easily escape notice without a knowledge of the ancient and mediæval lore concerning the king of birds. Milton himself supplies the best of all commentaries on the immense capabilities of tradition when he wrote earlier in the same essay:

"Books are not absolutely dead things, but do contain a potency of life in them to be as active as that soul was whose progeny they are; nay, they do preserve as in a vial the purest efficacy and extraction of that living intellect that bred them. I know they are as lively, and as vigorously productive, as those fabulous dragon's teeth; and being sown up and down, may chance to spring up armed men."

Such dragons' teeth, as we have seen, grew in profusion throughout the Middle Ages and an acquaintance with them, however slight, is illuminating in tracing the literary and scientific development of Europe.

APPENDIX II

Ancient Science in Literature

THE variety of literary uses to which ancient "history", or science, was put was comparable with the variety of Nature herself. In process of time the source was sucked dry—by the mediævalists and then by the contrivers of curious literary devices.

One interesting transitional stage is marked by that odd compilation, the *Travels of Sir John Mandeville*, one of the most successful impositions in literary history. Actually the book was written by a Frenchman and translated into English, the authorship being attributed to a Sir John Mandeville, a knight of the reign of Edward II. So well was the fiction maintained that the author earned the title of being the "Father of English Prose", as Chaucer was the Father of English Poetry.

The book itself appeared in 1356 and is a mixture of devotional literature and marvels of strange lands calculated to redeem the dullest work from any fear of monotony. No English prose work had hitherto broken away, even in part, from the orthodox subjects of religious interest, and care was taken even in this work not to be too bold in its introductory chapters, for the Holy Land is very fully described and, to all appearances, the impressions are derived from personal travel. But beyond that limit the suppositional Mandeville appears to have drawn mainly on his own imagination reinforced by old historical works. He professes to a knowledge of Amazonia where a fierce race of women warriors dwelt in resolute isolation. There is also much about Ind, the Royal Estates of Prester John, Cathay and a new country of great possibilities,

which threatened to eclipse India—Java. Interpolated with these descriptions are allusions to those creatures of undying interest in antiquity—the phœnix, crocodile, gold-mining pismires and others—all of them with slight changes and refinements. A typical passage is that on the phœnix—

"And men may well liken that bird unto God, because that there is no God but one; and also, that our Lord arose from death to life the third day. This bird men see often-time fly in those countries; and he is not mickle more than an eagle. And he hath a crest of feathers upon his head more great than the peacock hath; and his neck is yellow after colour of an oriel that is a stone well shining; and his beak is coloured blue as ind; and his wings be of purple colour, and his tail is barred overthwart with green and yellow and red. And he is a full fair bird to look upon, against the sun, for he shineth full gloriously and nobly."

The cockodrills (Peggotty's "Crorkindills" is not so far off the old spelling) are described as serpents; they "slay men and they eat them weeping". And, of course, they have no tongue. There are many echoes also of the traditional Ethiopia, further embellished. "In that country be folk that have but one foot, and they go so blyve that it is a marvel. And the foot is so large, that it shadoweth all the body against the sun, when they lie and rest them."

Diamonds grew like potatoes.[1]

"They be nourished with the dew of heaven. And they engender commonly and bring forth small children, that multiply and grow all the year. For right as the fine pearl congealeth and waxeth great of the dew of heaven, right so doth the very diamond; and right as the pearl of his own kind taketh roundness, right so the diamond, by virtue of God, taketh squareness."

[1] It took many centuries for this idea of the propagation of minerals to be relinquished. Voltaire, famous for his efforts to popularise science, as late as the eighteenth century rejected as unscientific the evidence of Genesis that the shells found on mountain tops had been left there when the Flood subsided. He preferred to think that the shells grew just as stones were known to grow; indeed reliable authorities had declared that they had seen with their own eyes the empty shells growing. The spirals were supposed to assist their growth in some peculiar manner and heavy crops were produced in this way. The variation in size of the Ammonite fossils, for example, depended on the length of time they remained in the earth; the spirals extended naturally and gradually.

There were also the adamants, with which diamonds are curiously associated, rocks of loadstone, so common in certain seas that ships had to be made without nails of iron. Otherwise they would break up and sink.

In reading Mandeville one gains the impression that the world is made up almost entirely of separate islands, each of them a mystery island with some peculiarity of its own. For instance, in the Ocean far away towards the north, was an isle "where that be full cruel and full evil women of nature. And they have precious stones in their eyes. And they be of that kind, that if they behold any man with wrath, they slay him anon with the beholding, as doth the basilisk." A noticeable record of the evil eye.

But enough has been said of the literature of marvels. Possibly in time people became tired of extravagances, also of the allegorical fashion which exploited them. A lighter and more delicate tone took the popular fancy in romances and euphuisms. The Romances of Chivalry all professed to have had a definite origin in the past. The manuscripts, it was confidently asserted, were discovered buried in tombs or hidden in strange places where such treasures might be expected to be found; and the incidents narrated were held to be as fully worthy of belief as the so-called facts of natural history had been taken to be infallible. It is evident, for example, that the Canon of Toledo in *Don Quixote* examined with minute seriousness, even if the seriousness was partly assumed, the tale of the boy of sixteen who at one cut of his sword cleaved a giant as tall as a steeple through the middle as easily as if he were made of sugar paste; or the tale of the great tower, full of knights, which cut through the sea like a ship driven before a favourable wind (a story not unlike the account in Pliny of the snakes of Arabia which wove themselves into a kind of raft and lifted their heads to catch the breeze as they sailed across the Indian Ocean).

Sancho with his nimble wit could use the newer mode of images from nature with great effect. When challenged to a fight for which he had little stomach, and being accused of

cowardice for refusing, he warns his opponent of the kind of man he might become if he were once roused:

"No man knows what is in the soul of anyone, and some go out for wool, who come home shorn; and God blesses peace, and curses brawls; for if a cat, pursued, and pent in a room, and hard put to it, turns into a lion, God knows what I (that am a man) may turn into."

In England the influence became very marked. Lyly, the great exponent of Euphuism, drew copiously from the ancient stock to frame his similes and mannered conceits. He employed in doing so, it must be admitted, more polish than humour. The old natural history supplied him with a surprisingly varied collection of texts on which to hang his proverbs and dry moralisings. Of the brighter gems of decorative symbolism the following were taken straight from Pliny:

"Though thou have eaten the seeds of rocket which breed incontinency, yet have I chewed the leaf of cress which maintaineth modesty."

"Persian trees in Rhodes do only wax green but never bring forth apples."

"Follow Apelles, that cunning and wise painter, which would let no day pass over his head without a line, without some labour."

"Let them remember that the ostrich digesteth hard iron to preserve his health, that the sick patient swalloweth bitter pills to be eased of his grief, that youth should endure sharp storms to find relief."

"Wine should be taken as the dogs of Egypt drink water, by snatches, and so quench their thirst and not hinder their running."

"As the adamant draweth the heavy iron, the harp the fleet dolphin, so beauty allureth the chaste mind to love and the wisest wit to lust."

"Although the worm entereth almost into every wood, yet he eateth not the cedar tree."

The taste for the exact antithesis and the perfect pattern waned after a while because people tired of a mannerism which, however skilful it might be, soon became monotonous. The influence of the critics also counted. Drayton complained that this

"Talking of Stones, Stars, Plants, of Fishes, Flies
Playing with words and idle similes"

were the tricks of so many lunatics. Nor did Shakespeare take the Euphists very seriously, for he puts in the mouth of Falstaff some excellent examples—

"Though the camomile, the more it is trodden on, the faster it grows, yet youth, the more it is wasted, the sooner it wears." . . . "Look whether the wither'd elder hath not his poll claw'd like a parrot." . . . "To wake a wolf is as bad as to smell a fox."

These have the true note of virtuosity; and Falstaff caps them all with his reflection on Feeble's gallantry.

"Well said, courageous Feeble! Thou wilt be as valiant as the wrathful dove or most magnanimous mouse."

Shakespeare, however, had happier methods than to weave patterns on an outworn model. For one thing, it was too easy: "How every fool can play upon the word! I think the best grace of wit will shortly turn into silence and discourse grow commendable in none but parrots."

The richness of his outlook on every aspect of nature was too sincere for him to be content with mere artificialities; he saw too many true images in nature with which to give emphasis and concrete effect to his expression.

Miss Spurgeon has analysed and classified the metaphors and similes of Shakespeare with the discovery that the vast bulk of them are drawn from simple everyday life; but naturally "there are others," she says, "facts learnt from books or hearsay, which he can never have seen or heard: a lion fawning over its prey, a tiger stiffening its sinews, high Taurus' snow, the basilisk's eye or the mandrake's scream; there are some purely fanciful and imaginative, such as wit made of Atalanta's heels, and a man plucking bright honour from the pale-faced moon."

Evidently Shakespeare was an eager reader of the classical material that came within his reach, but probably also very much an opportunist in picking out such allusions and frag-

ments as would give force and life to his plays. The science he knew was used by him to the fullest extent as a vehicle for poetical thought. The dew, to take one example, according to contemporary authorities was no mere form of condensed vapour, but a gift of the gods sent straight from heaven, transformable into such fanciful things as honey-dew, or the tears of flowers that wept when the moon wept, or converted into pearls (as in Pliny), or representing a nothingness into which Hamlet would have wished his too too solid flesh to melt and be resolved; or again in the malignant form of a curse, as threatened by Caliban when "brushed with raven's feather from unwholesome fen".

His science was always the old science, not the new. Fire was an independent spirit that actually inhabited the flint, and danced along the yards and bowsprit of a ship in the manner of St. Elmo's fire. There was no end to the world of fancy at his command, nor were the marvels he narrates in any sense fictitious to him. The sweet uses of adversity could be quite honestly compared with the precious jewel in the toad's head—as convincing a morality-saying as any.

Even mermaids were a matter of faith, not of fable. Opinion had not changed since Pliny's day, and no mere fancy dictated the lines:

> "I heard a mermaid on a dolphin's back,
> Uttering such dulcet and harmonious breath,
> That the rude sea grew civil at her song,
> And certain stars shot madly from their spheres
> To hear the sea-maid's music."

Nor was the astronomy of this passage a fiction. Shakespeare's authority was the Ptolemaic system, in which the eight translucent spheres circled round the stationary earth, each sphere carrying its proper stars or planets. Instead of, as we should say, men jumping out of their skins the stars were said to shoot madly from their appointed places. He could also invoke the fixity of the pole-star which modern science would scarcely allow:

"But I am constant as the northern star,
Of whose true fix't and resting place quality
There is no fellow in the firmament."

The effect with which Shakespeare could use his knowledge of natural history to heighten the effect of tragedy was particularly striking. Tigers, bears, wolves, dogs that irritate and bite, monsters of the deep devouring their own kind, toads, serpents and scorpions, plagues of insects, the predatory owl which the diminutive wren fought so pluckily in defence of her young ones, spiders laying snares for unwary flies, monkeys and goats—all these figures are used to work up the dark and forbidding atmosphere of *Macbeth*, *Othello* and *King Lear*. Also winds, tempests, and "impestuous blasts" threaten to "smite flat the thick rotundity o' the world", and so spread disaster.

Traditional magic played its part no less thoroughly, and much of the old medicinal lore was employed with the deliberate intention of being revolting and haunting. It would be a mistake to imagine that the hell-brew of the witches in *Macbeth* was a mixture concocted in any spirit but that of deadly earnest. The belief in witches was so universal in Shakespeare's time that no trifling with their incantations would have been permissible. The most lurid background therefore possible for the effectiveness of the tragedy carried enormous weight with the audience, with whom every fresh loathsome ingredient thrown into the pot must have conveyed a separate thrill of horror. To-day the scene could be parodied with the greatest ease.

From internal evidence it is almost certain that Shakespeare had access to Holland's translation, as is made clear by the use he made of a passage in the Second Book of the *Natural History* where it is stated that "the sea Pontus evermore floweth and runneth out into Propontis, but the sea never retireth back again within Pontus"—meaning that the tides in the Black Sea were unaffected by the sun and moon and so remained constant. Othello in reply to Iago's remark that he might yet change his purpose borrows the figure in the lines:

"Never, Iago. Like to the Pontic sea,
Whose icy current and compulsive course
Ne'er feels retiring ebb, but keeps due on
To the Propontic and the Hellespont."

And if we recall Pliny's tribute to Mother Earth and her long-suffering kindness to mankind we shall find a remarkable similarity of ideas, almost too close to be a coincidence, in Friar Laurence's speech in *Romeo and Juliet*—

"The earth, that's nature's mother, is her tomb;
What is her burying grave, that is her womb;
And from her womb children of divers kind
We sucking on her natural bosom find,
Many for many virtues excellent,
None but for some, and yet all different.
Oh, mickle is the powerful grace that lies
In herbs, plants, stones, and their true qualities;
For nought so vile that on the earth doth live,
But to the earth some special good doth give."

It is true to say that he cared little or nothing either for the truth or the inaccuracy of the science that was handed down from the past. He worshipped Nature in whatever guise she might appear:

"Thou, Nature, art my goddess;
My services are bound to thy law."

Also he marvelled at the blindness and obtuseness which dwelt in the hearts of the duller natures which were insensitive to her beauties—

"What, are men mad? Hath nature given the eyes
To see this vaulted arch, and the rich crop
Of sea and land, which can distinguish 'twixt
The fiery orb above, and the twinn'd stones
Upon the unnumbered beach?"

In actual fact men were beginning in Shakespeare's day to use their eyes more intelligently and to analyse the operations of nature far more closely. Modern science was on the eve of breaking away from the old. Without exaggeration Shakespeare was standing at the exact point where the rich traditions

of the past were giving way to a world of new possibilities. In 1600 two events occurred which, according to Dr. Charles Singer, marked the parting of the ways. One was the martyrdom of Giordano Bruno, a disciple of Copernicus, for daring to urge his scientific convictions against the verdict of antiquity. The other was the publication of a work by William Gilbert entitled *A New Physiography Demonstrated by many Arguments and Experiments*, a book which laid down for the first time the principles now recognised as essential to any modern scientific treatise. It insisted that argument and experiment must come into play in determining every form of scientific truth; authority, in fact, was to be reckoned of no value unless confirmed by experience. In this proposition, which, strange to say, was then a distinctly revolutionary point of view, rested the gradual emancipation from the theories, beliefs, uncorroborated observations and superstitions which constituted the mass of ancient knowledge. Most of these remained, it is true, embedded in human consciousness; but the process of sifting evidence was now definitely setting in.

It is therefore no idle conjecture that Shakespeare while profiting from the wealth of ancient thought and poetical fancy which he adopted as part and parcel of his stock of knowledge, enjoyed at the same time a freedom beyond that of his predecessors, a partial release of the spirit from the dead formalism of the past. His genius was "a bubbling fountain stirred by the wind"—stirred, that is, by the new inspirations as well as by the old. In a Sonnet he raises the question "whether we are mended, or whether better they"—a question not any easier to answer now than it was rather more than three centuries ago:

> "If there be nothing new, but that which is
> Hath been before, how are our brains beguiled,
> Which, labouring for invention, bear amiss
> The sacred burthen of a former child!
> O that record could with a backward look,
> Even of five hundred courses of the sun,
> Show me your image in some antique book,
> Since mind at first in character was done.

That I might see what the old world could say
To this composed wonder of your frame;
Whether we are mended, or whether better they,
Or whether revolution be the same.
Oh, sure I am, the wits of former days
To subjects worse have given admiring praise."

We have already seen that "what the old world could say" was said again to admirable purpose by Shakespeare, more completely than by any other English poet. Then as to the world itself, is it not true that it is a book (to follow the simile) in which each man finds what his nature enables him to visualise and teaches the lesson he wishes to learn? Shakespeare's view of things and the lessons he taught from them were essentially those of the Greeks, whose importance lay not so much in what they saw as in the quality of their vision. For their world, in spite of its limitations (or possibly in virtue of them) and its obvious inaccuracies, was in a sense more secure and comprehensive than the modern with all its doubts and hesitations. The Greeks at their best—and they must be judged by their best—were for all time a people whom

"Business could not make dull, nor passion wild:
Who saw life steadily, and saw it whole."

APPENDIX III

REFERENCES to passages quoted in the text from Philemon Holland's translation of the *Natural History*, in two volumes, London, printed by Adam Islip, 1601.

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